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Introduction

The global and unequally distributed proliferation of information, communication and experiential technologies has led to the development of a highly differentiated and structurally complicated media arts field. Even as the advent of some technologies is actively celebrated and their potential exploited by some, some others have barely come to grips with the possibilities of 'long-obsolescent' technologies. Even as some struggle with the newness of certain technologies, others somewhat jaded with the determinative influence on their lives and creativity are consciously opting for 'old' and 'low' technologies. In such a globally differentiated situation, the very notions of 'new' and 'old' technologies though pandered as an issue of relative sophistication is revealed as an issue of relative access largely determined by historical, political, economic and cultural contexts. That such technologies have become important engines of economic development has made a critical evaluation of their complicities in and complex relationships to particular socio-cultural, economic and political ways of being especially difficult. That one can simultaneously critique technologies and yet enjoy the benefits and pleasures of some particular technologies might seem like a compromise and sell-out for some, but is a necessary aspect of one's being in a world infused with such technologies to a point where opting out is both pragmatically impossible and ethically irresponsible. In the art world, the problems of how one critically evaluates creative uses of technology is often confused with the questions of how one creatively enables the critical uses of technology. The themes for ISEA2008 Symposium have been selected to respond to the challenges of new and old technologies in creatively engaging the critical problems and possibilities of our age. The themes are **Locating Media**, **wikiwiki**, **Ludic Interfaces**, **Reality Jam** and **Border Transmissions**.

Locating media

The oft-heard rhetoric of recent media technologies is that it complicates traditional notions of spatial and geographical location insofar as these technologies are said to attend to one's technological needs without regard to where one is; for example, one common myth goes like this: 'one can access information about anything and communicate with people on the net without regard to which country one is in'. Such postulations of location-neutrality however are based on a fallacious assumption that one's location is merely a secondary aspect of one's experiential environment and thus can be phenomenologically simulated or even negligibly circumvented by the mediation of communication, information and experiential technologies. Location, however, is a complex experience constituted by one's cultural, economic, political and technological environment that is differentially distributed and conceived in different parts of the world. Thus, new technologies, even while purporting to surmount location, seem to be merely following the contours of the location-specific variables that operate in any particular space. While many recent technologies also present themselves as 'location-aware' that enable one's ability to address these location-specific variables in some ways, it is noteworthy that such experiences very often rely on simulating only an indexical notion of location through a series of sensory cues related to a particular space. In light of the centrality of location as a critical issue and possibility, this theme seeks to examine how the specificities of location mediate and are media-ted by both old and new technologies of information, communication and experience.

Wiki wiki

It is interesting that the Hawaiian word, 'wiki wiki', meaning "quick" has become co-opted to label the revolutionary systems and practices that support the easy and speedy tele-collaborative authoring of knowledge online — i.e., wiki. Wiki is an extremely easy-to-use authoring system for online content that cannibalizes on the HTML protocols with additional facilities to monitor all the changes being made, revert to content prior to editing as well as a space to discuss the evolving content. The fact that users are able to access the pages and change content without any restrictions, defies the development of a notion of single authorship and thus also the possibility of authorial responsibility for such content. The relative ease in developing online content with a community of 'at a distance' presents wiki as a model tool for tele-collaborative production. Wiki is yet another example of how technologies are changing the ways in which creative knowledge production is being transformed by enabling collaboration between diverse individuals. In this theme, we seek to initiate discussion, deliberation and development in collaborative creation using new technologies. How have new and old technologies contributed to the development of collaborative making? What are some of the issues raised by collaborative creation; for example, authorship, artistic responsibility, claims to intellectual property, conflicts and confluences of disciplinary knowledges and practices, etc. What are the spaces of such collaborative work — what are the transitional spaces between the artists' studios and scientific labs?

Ludic interfaces

The infantilization of play, that is, the historical association of playing with children and non-serious activities, has led to the systematic exclusion of play and fun from 'serious' creative, scientific and technological investigations. While the ludic (i.e., play-related) dimensions of artistic creativity have been variously explored recently in both art works and in scholarly research, the interactions between technological developments and the pleasures described as 'fun', are few and far between. In fact, the history of technological development has more instances of people enjoying technologies than of those willing to acknowledge or systematically deliberate on such pleasures. It has been argued recently that the phenomenal development of the game and entertainment industries, primarily driven by various technologies that engender the expanded exploration of embodied pleasures, has highlighted the potential of technologically-driven experiences of fun. However, there are those who assert that there is still much more need to investigate the complicities between technology and pleasure in these experiences and to develop alternative modalities of exploring the technological possibilities of pleasure and vice versa.

Reality jam

While the reality effects of photography had forced a reevaluation of the conventions and concerns of painting as well as of perception in the mid 19th century, the realistic aspirations of recent visualization and experiential technologies (e.g., in animation, gaming, immersive environments, mixed/augmented reality) are forcing us to reconsider our registers of the 'real' in our media and our everyday lives. The con-fusing of the real and the virtual through seamless transitions and the perpetual obfuscation of the edges that demarcate them are increasingly the focus of scientific research as well as of creative works. The improvisational nature and interference potential of such 'reality jamming' — i.e., this pressing together of the real and virtual in a context where their distinctions are deliberately obscured — open further possibilities for research, scholarship and creative production. Artists and researchers should continue to explore the ways in which the 'virtual' presences and experiences of folklore, religious beliefs, magical rituals and science and media-fiction interact with and counteract the lived experiences of the 'real'.

Border transmissions

The 'borderless world' and the 'global village' are different imaginaries of a world seemingly transformed by the speed and efficiency of information, communication and experiential technologies — of a world where the political borders of nation states were considered to be either irrelevant or difficult to sustain. The age that announced the 'borderless world' is, however, ironically also the one that has displayed the greatest anxiety about this breakdown and invested the largest amount of resources and time in the increasing surveillance and control of these borders. While these borders historically have been permeable to certain kinds of economic, socio-cultural, political and military transactions (i.e., trade, cultural objects and experiences, religious missions, etc.), the development of technologies that facilitated greater communication and transportation across them has only increased the anxiety to control these transactions. The contestation over these borders and of the transmissions across them continues to be a struggle as much determined by technological developments as it is by the politics, cultures and socio-economic systems that mediate within and between these borders. The question of how one negotiates technological developments that simultaneously contribute to the increasing opening and ossification of borders is of utmost significance. The strategic and tactical possibilities of networking, communication and experiential technologies in ways that enable the emergence of different conceptions of borders, nation-states and of the infectious transmissions that problematize these demarcations are more urgent than ever before.

This proceedings constitutes a selection of the peer-reviewed papers, panel presentations and a select few artist presentations from the ISEA2008 conference. We sincerely hope that it provides a rich documentation of the diverse and stimulating contributions from the conference.

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Instantaneously Mediated Virtual Visions: The Transmedia Circuit of Images, Body and Meanings

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Introduction

The contemporary visions and constructions of the world based on virtual imagery and their relationships with reality are a complex media web structure where the transitional model from old media to new media is not sufficient to explain the interactions between technological structures, creative behaviors and images as processes of remediation. The concept of remediation by Jay David Bolter and Richard Grusin is presented within a context of a digital medium that "wants to erase itself."[1] What Bolter and Grusin do not mention is the overlaying processes and hybridizations between media that create new languages and sublanguages, both textual and visual, generating new recontextualizations.

Bolter and Grusin identify the causes of remediation in a need for immediacy in the media/public engagement. But their brand of immediacy appears to be of a different nature from that to which Pier Paolo Pasolini refers. For Bolter and Grusin it is the immediacy of the artificial construct in creating an immediate and spontaneous style,[2] for Pasolini it is the immediacy of a direct perception with the poetical and mythological realism of human existence.[3]

Either as a process of exploitation, as described by Pasolini, or as a quest to create and achieve a sense of liveliness, as envisaged by Bolter and Grusin, the contemporary transmedia engagements between old and new media are characterized by processes of commixture, hybridization, borrowing and appropriation.

Transmedia and Recontextualizations

Bolter and Grusin look at the concept of repurposing as an elemental part of the media borrowing of remediation and subsume the complex processes of content transfer and recontextualization (cultural, historical and aesthetic) under the concept of remediation, abandoning or relegating to a minor contribution the characteristics of new and old media's specific languages.

Pasolini explained that there is an existence in the object of a mythological absolute and that the inability to recognize the mythological absolute generates a loss of meaning. "Has lost all meaning for you… …like a discarded memory…"[4] The loss of meaning, according to Jean Baudrillard, is caused by the remediation processes of digital media that function as generators of void.[5]

Baudrillard's interpretation dismisses the sensory-perception nature of the media processes that are characterized by a recombination of both mediacy and immediacy approaches with a constant re-appropriation of the distant, recent or even contemporary past. Baudrillard writes that art is "like the worn threads of a piece of fabric, it is an irony produced only by the disillusion of things, a fossilized irony."[6]

However, the role of contemporary visual arts, particularly of transmediated art forms, is that of recontextualizing the existence of the old and revealing its multiple relationships to new media. The transmediation processes happen in a matrix-based relationship between mediacy and immediacy as negotiations between old and new. These are the processes that reveal new meanings and strategic spaces that are not self-referential.[7]

It has to be considered in this context that even the new virtual and mixed reality systems, as art forms and frameworks of visual representations, "abide by what can be fashioned for sense-perception."[8] But is Georg Hegel's statement still valid when the visual neurological stimuli in a Virtual Reality Environment (VRE), with the support of the neurosciences, can be constructed to 'speak' directly to the brain?

The 'unreality' of VRE and the stimulation of particular areas of sense-perception can overcome the impasse of the extermination of reality through the creation of multiple illusions. The focus is shifted onto the brain's absolute perception of visual images, not to recuperate "God or Reality,"[9] as Baudrillard suggests, but to rediscover the immediate sense-perception relationship of the brain with the visual images through mediated experiences.

Visual artworks within VRE change the modalities of experiential engagements through mediation to such an extent that the artworks themselves are transmediated 'beyond' their original existence. Artworks' perception in VRE is achieved through an increasingly refined knowledge and technological support that allows to speak directly to the brain or to target the 'immediacy' areas of the brain through a mediated construct.

The new constructs do not necessarily have to be those of VRE. They can take the forms of mixed realities environments or of hybridizations between new and old media, and be placed from the virtual into a real space that is contextually and technologically different from the medium and space they were created in. It is this possibility of infinite connections and reconnections that, as in the writings of Mark B. N. Hansen or Rosalind Krauss, in her essay *Reinventing the Medium*, offer an understanding of the history of the hybridization processes and their bearing on contemporary digital exphrasis as well as on the phenomena of transmediation. It is the Bergsonist approach to the theory of perception that offers a more in depth understanding of contemporary transmediations, as images become relevant and irrelevant according to a body that is, in Gilles Deleuze's interpretation of Henri Bergson, a "center of indetermination within an acentered universe."[10]

This approach moves away from solipsistc and self-referential media constructions and places a different emphasis on the medium. It is no longer just the remediation claim of Bolter and Grusin that media are "thoroughly and bidirectionally interchangeable."[11] It is a claim that Hansen criticizes, advocating the embodied experience as inseparable from the act of cognition.

Conclusions

In this context, where interchangeability and media specificity clash, Peter Weibel with his notion of a universe without a center and Pasolini with the concept of mythological realism come into play. They support the Bergsonist approach of a universe without center, where the experiences of the object, of its realities and mythological traces, justify more than ever a transmediation approach based on the linguistic visual specificities of Walter Benjamin's idea of medium and its multiple interactions: textual, contextual and technological.

Pasolini and Weibel offer an understanding of the contemporary jamming of reality and virtual not only as a conflicting relationship of a meaningless circuit of images, bodies and meanings, but as a constant reprocessing transmediation that through multiple media vernaculars affords the necessary media experimentations for acts of cognition that are mythological, virtual and at the same time expressions of alternative realities.

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1 Bolter, Jay David and Grusin Richard. 2000. *Remediation, Understanding New Media*. Cambridge, MA: The MIT Press, p. 45.

2 Ibid. p. 9.

3 Pasolini, Pier Paolo. 1988. *Heretical Empiricism*. Edited by Louise K. Barnett. Translated by Ben Lawton and Louise K. Barnett. Bloomington and Indianapolis: Indiana University Press, p. 172.

4 Pasolini, Pierpaolo. 1970. *Medea*. VHS. London: BFI publishing.

5 Baudrillard, Jean. 1994. *The Illusion of the End*. Translated by Chris Turner. Stanford, CA: Stanford University Press, pp. 55-56.

6 Ibid. p. 25.

7 Ibid. p. 56.

8 Hegel, G. W. F. 1998. *Aesthetics: Lectures on Fine Art*. 2 vols. Translated by T. M. Knox. Oxford: Clarendon Press, p. 1035.

9 Baudrillard, Jean. 2000. *The Vital Illusion*. Edited by Julia Witwer. New York: Columbia University Press, p. 61.

10 Flaxman, Gregory, ed. 2000. *The Brain is the Screen: Deleuze and the Phylosophy of Cinema.* Minneapolis. University of Minnesota Press, p. 20.

11 Hansen, Mark B. N. 2004. *New Philosophy for New Media*. Cambridge, MA: The MIT Press, p. 1.

Synthetic is More Sensuous: Advances in Neurology and the Aesthetics of New Media

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Powerful new techniques, fMRI, magnetic encephalography, recordings from neuronal ensembles, visualizations of neuronal growth, and neuro-chemical analyses are elucidating brain/mind functioning — the process of experience. These techniques prosthetically extend us across technological platforms, shift our preferences to the synthetic, and our purely human evolution to human/machine evolution.[1] For instance, Nicolelis uses implanted electrodes in volitional cortical motor neuron ensembles to enable control of a mouse cursor, or a robot, from thought alone.[2] Similarly, audio recordings from implanted electrodes in rat brains, extend Matt Wilson's sensorium, enabling him to "listen in" on rats' dreams.[3]

Brain evolution is a form of neuroplasticity, as are memory and individual brain development. In the fetus neurons proliferate, migrate into place and make an overabundance of synaptic connections. Used connections are selected and unused synapses are pruned. V.S. Ramachandran theorizes that aberrantly remaining (unpruned) cross-modal connections between the color and adjacent number area in the brain causes synesthesia, and furthermore that creativity results from a richness of unpruned cross-modal connections forming a high capacity for metaphor.[4,5]

Paradoxically, memories are unstable during recollection. After removing a memory from storage, the brain reconsolidates it into stable form. Re-storage depends on protein synthesis which, if manipulated, alters the memory (thus explaining the ease of implanting false memories).[6,7] Different forms of memory are organized distinctively in the brain, i.e. declarative (language based) and non-declarative (procedural/skill based) memory, episodic (personal experiences) and semantic (learned facts) memory, spatial memory, etc.[8]

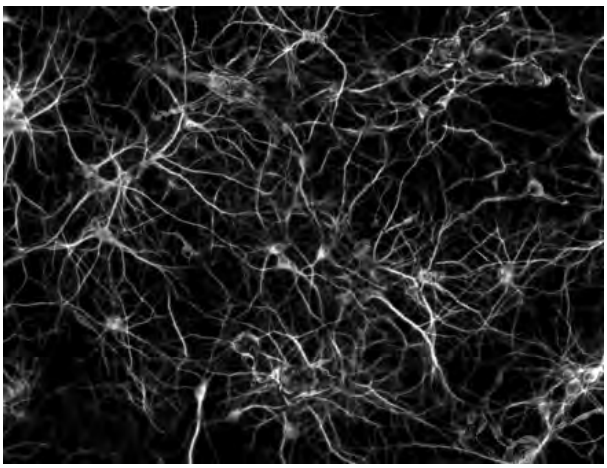
Mirror neurons, cortical neuron systems that fire both during one's performance of an action, or expression of emotion, and during the observation of another enacting these, form the basis of empathy and art appreciation. Understanding what others feel occurs by the inner imitation of the observed action or expression. The representation is matched to an existing representation and used to modulate emotional experience. Empathic individuals exhibit unconscious mimicry of other's postures, mannerisms, and facial expressions more than non-empathic individuals.[9]

How consciousness is integrated into a stream of coherent experiences is called the binding problem. Neuroscientists hypothesize that two brain/mind systems control the stream of consciousness, the thalamocortical axis and the prefrontal cortex (PFC). Nearly all information from the sense organs passes through the thalamus. The thalamic reticular nucleus (TRN) generates most of the internal activation of the cortex modulating its gates in "burst firing" or continuous (tonic) firing mode. In tonic mode, the simultaneous firing of broad neuronal populations leads to neuronal synchrony, triggering looping activation in cortical circuits, and amplifying one loop over others in a recursive process. Interacting re-entry loops reinforce and compete with each other, with the dominant loop(s) becoming conscious. The PFC integrates consciousness by controlling the focus of attention, picking the winner of the looping competition set up by the thalamus and updating representations in working memory.[10,11,12]

The process of experience, brain/mind functioning, is the most important subject of contemporary art; it is native for new media art. Certain neuroscience experiments designed to study the competition for consciousness and others which manipulate memory are structurally similar to *Walks* by the artist Janet Cardiff. In *Walks*, the viewer, while instructed to follow a prescribed path, receives audiovisual input related to the current environment, the past environment, as if the speaker is present, or is somewhere else. Streams of sensory stimuli loop, magnify, cancel, conflict — competing for which one will become conscious or will reconfigure, confuse or implant a memory.[13]

If a computer network had a consciousness what would it be like? This is the subject of Ben Rubin's *Listening*

Post, David Rokeby's *n-Chant*, and Lynn Hershman's *Dina*. *Listening Post* is a curved wall grid of screens displaying text culled from 100,000 internet chat room users, mixing synthesized voice and other sounds in six looping movements (the first beginning with the text "I am…"), creating a recursively evolving conscious "surface" to the internet.[14] In *n-Chant* each of the [n] numbers of computers arranged in a network suspended from the ceiling, speaks English sentences in its own voice. In the undisturbed equilibrium resting state they chant with each other. A visitor speaking into a microphone disrupts the coherent chanting and the "state of mind" shifts until the equilibrium reemerges.[15] *Dina*, a bot, is a consciousness represented on a screen as woman's lip-synched face. Through artificial intelligence software (bolstered by internet searches) she converses with the viewer.[16]



Synthetic Neural Network

In the DVD *Placebo* Saskia Olde Wolbers uses an intimate first person stream of consciousness narrative voiceover to evoke individuals existing in a fluid mental space, enclosed worlds where fantasy, reality, real and false memories are blurred together. The video imagery (scaleless interior/exterior landscapes) is startlingly reminiscent of the neuronal architecture of the brain — networked treelike forms evoke dendrites, straight bundles evoke tubular axonal white matter connections and budding bubbles crossing small gaps evoke synaptic transmissions.[17]

Thomas Struth's museum pictures, whose subject is mirror neuron systems, show the critical role of inner imitation and motor enactment for empathy and art appreciation.[18] The photographed visitors eerily align themselves in shapes reflecting both the images they view and their contexts. Struth's photographs, too, represent his own consciousness as it mirrors the consciousness of the artist who created the depicted work.

Cory Archangel replaces "unalterable" computer game chips with chips he burned himself with an altered game/graphics code. These hacked games explore silicon and neuronal plasticity in memory and learning; the fixed game chip is modified, "learning" to be a new game. He transformed *Super Mario Brothers* into *Super Mario Clouds* by deleting all but the clouds and the shooting game *Hogan's Alley* to *I Shot Andy Warhol* by replacing the generic targets with images of Pope John II, Flavor Flav, and Andy Warhol.[19]

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1 Wolf, Maryanne. 2007. *Proust and the Squid: The Story and Science of the Reading Brain*. New York: Harper Collins. This shift is the third in a series — the first enabled oral language (40,000 years ago) and the second enabled written language (6,000 years ago).

2 Nicolelis, Miguel. 2007. "Actions from Thoughts." In *Your Brain and Yourself* (Conference). http://www.nyas.org/ebriefreps/splash.asp?intEbriefID=676

3 Wilson, Matt, interviewed. Radiolab episode, "Sleep". http://www.wnyc.org/shows/radiolab/episodes/2007/05/25

4 LeDoux, Joseph. 2002. *Synaptic Self*. New York: Penguin.

5 Ramachandran, V.S. 2004. *A Brief Tour of Human Consciousness*. New York: PI Press.

6 Kandel, Eric. 2003. "The Molecular Biology of Memory Storage." In *Nobel Lectures in Physiology or Medicine 1996-2000*. Hans Jornvall (Editor), Singapore: World Scientific.

7 LeDoux

8 LeDoux

9 Carr, Laurie, et al. 2003. "Neural Mechanisms of Empathy in Humans", PNAS, http://www.pnas.org/cgi/reprint/100/9/5497.pdf

10 Granger, Richard H. and Hearn, Robert A. 2007. "Models of thalamocortical system". *Scholarpedia* 2(11):1796. http://www.scholarpedia.org/article/Models_of_thalamocortical_system

11 Tononi, Giulio and Edelman, Gerald M. 1998. "Consciousness and Complexity." In *Science* 282, December 4.

12 Maia, Tiago V. and Cleeremans, Axel. 2005. "Consciousness: converging insights from connectionist modeling and neuroscience." In *TRENDS in Cognitive Sciences* 9 (8), August.

13 Cardiff, Janet. http://www.cardiffmiller.com/artworks/walks/index.html

14 Rubin, Ben. http://www.earstudio.com/projects/listeningpost.html

15 Rokeby, David. http://homepage.mac.com/davidrokeby/nchant.html

16 Hershman, Lynn. http://www.lynnhershman.com/

17 Olbers, Saskia. http://www.drawnbyreality.info/saskia.html

18 Stafford, Barbara. 2007. *Echo Objects*. Chicago: University of Chicago Press.

19 Arcangel, Cory. http://www.beigerecords.com/cory/tags/artwork/

Scientific Visualisations and Mixed Realities at the Art/Science Nexus

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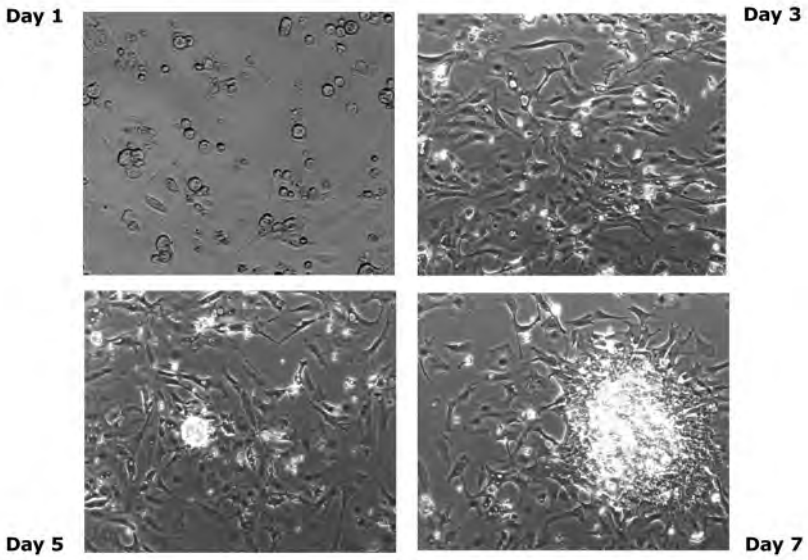
Art/Science

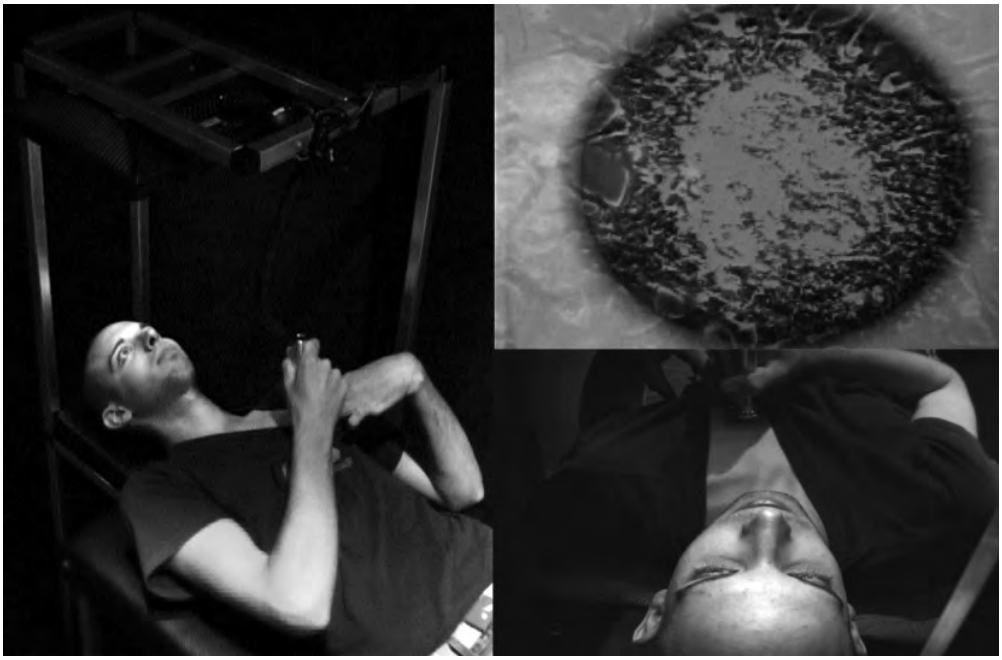
What is it, one might ask, that motivates an artist to position their practice at the art/science nexus — a random moment of eccentricity perhaps; or a more considered alignment with a discipline reputed to involve a systematically organised body of knowledge? Conceivably it could be argued that, if science is defined as knowledge gained by the study of the physical world, aware and interested individuals fall within the category of "scientist" in the manner of the erstwhile "natural philosopher".[2]

Today however, the disciplines of art and science are habitually regarded as divergent. Realistically speaking, neither artists nor individuals customarily possess the acumen or have access to the high-end technologies with which the contemporary scientific researcher is, by definition, equipped. I entered the rarified laboratory environment with the aim of exploring scientific constructs and research data from the perspective of a visual artist. My methodologies synthesised ground-breaking models and evolving outcomes; and I developed innovative collaborations which fore-grounded the artist/researcher as an active participant at the core of the experimental processes.

It is pertinent that one of my scientific collaborators described this pioneering construct as 'something quite other';[3] a hybrid entity navigating the spaces of what might be regarded as a mixed reality that represents more than the sum of its parts. The three part 'vital force' series of artworks: *Temporal Intervals*,[4,7] *Wave Writer* [5,7] and *Machina Carnis* [6,7] share an open-ended approach, empowered by the discrete use of technology. This enables the viewer to engage with the artworks from the position of a participant who brings them to life and completes them through his/her interaction.



Digital videomicrograph stills of the artist's adult stem cells in culture. On Day 3 the chemical growth mix was added. Day 5 shows clusters of pulsing stem cells forming & Day 7 shows the large beating clusters of cardiac cells. (Digital videomicrograph stills courtesy Trish Adams)



Whilst locating his heart-beats a participant looks up at the digital videomicrograph image of the beating cardiac cells above him and sees his facial image superimposed there. (Documentary digital video stills Ben Wickes)

Corporeality

I have explored contemporary constructs of "humanness" by shifting the activity of viewing from a transparent relationship of meaning and expression to an immersive encounter with the "self". My art/science research projects have examined expressions of corporeality and moments of perception which exceed habitual boundaries. Both *'Temporal Intervals'* and *'Wave Writer'* probe the ambiguity of data flow and bodily "presence" through the interplay between the real-time installation and remote Internet access. Via the feedback loops of the informational mode — through the space-time separation enabled by computer and communications networked forms of dispersal and interaction — the artwork experience becomes more participatory and widely accessible. The divergent characteristics of digital technologies lead to a deliberation on contemporary notions of virtual realities that are redolent with the so called 'worlds within worlds'[8] that revolutionised perceptions at the advent of the microscope.

Reflecting upon relativistic constructs of the observer that contravened accepted norms of "objective" scientific protocols I adopted the role of "human guinea pig". In *'Machina Carnis'* I experimented on my own adult stem cells in the laboratory and through this pioneering strategy I became both subject and object. In the artwork: *'Machina Carnis'* I probed the discourses surrounding genetic manipulation, the orthodoxies of "being", and the intricacies of emerging technologies — both visual and procedural. Contemporary discoveries in stem cell research and the field of biomedical science led me to investigate the status of living systems and the characteristics of corporeality. The controversial and wide ranging implications of adult stem cell research have impacted upon perceived understandings of the structure of the human body and the ambiguous concept of "humanness" itself.

I questioned how we can differentiate between the machine and the human being if some attributes are shared by both. The computer, for instance, is a language system that is separated from the human but it also has characteristics that are identified with humans. In this case, developmentally and ontologically, we are 'addressing the space in which the human comes into being… (that is) not only calling into question what language might be but also what it might be to be human'.[9] Speculations such as these lead one to consider and interrogate notions of the posthuman, which instantiate the material body to such an extent that it is seen as informational patterns in which biological embodiment becomes accidental rather than inevitable.[10]

Visualisation

My associations with the advanced digital imaging technologies incorporated into scientific research and documentation led to my interrogation of the epistemological status of scientific imaging, computer-mediated representations and the effects of digital simulations. I became aware that 'digitality provides a set of lived circumstances in which our senses encroach upon us in a different way'.[11] From an artistic perspective the scientific data resonated with photographic moments of perception in that it moved the activity of viewing from a transparent relationship of meaning and expression to a level in which significance seems to be there without the presence of subjectivity.

In this context the time-lapse videomicrograph cellular image data incorporated into *Machina Carnis* exceeded normal boundaries, creating an encounter with the "self" and other intensely individual associations. Consequently this interactive artwork was 'characterised by complex interrelations of real and virtual entities' with which the viewer/participant could 'engage in a dialogue… of different expressions of mind and matter'.[12] Points of confluence occur when each participant combines their knowledge that the cardiac cells — represented in the image date — were cultured from adult stem cells, similar to their own. This awareness evokes intangible emotional and interpretative personal responses for each installation participant.

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1 "HOST": http://www.qbi.uq.edu.au/index.html?page=79764

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3 Nurcombe, Victor. 2005. "E-interview by Patricia Adams." In *The Implications for Artistic Expressions and Representations of Corporeality of the Experimental Techniques of Biomedical Engineering*. Doctor of Visual Arts Thesis, Adams, Patricia, Griffith University, appendix v.

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6 Zuvela, Danni. 2005. "Art from the Heart." In *Real Time 68*, Aug-Sept, Sydney: Open City Inc, p.35, accessed 18.04.08. http://www.realtimearts.net/article.php?id=7937

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11 Munster, Anna. 2004. "Digitality: Approximate Aesthetics", http://www.ctheory.net/printer.aspx?id=290 p. 5. accessed 15 June 2006.

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The Network — A Challenge in New Media

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"*The Network*" is the abbreviation for [NewMediaArtProjectNetwork]||cologne, an experimental project environment for art and new media developed, created, curated and directed by Wilfred Agricola de Cologne (AdC), a multidisciplinary media artist, New Media curator and media art activist from Cologne/Germany.

Starting on 1 January 2000 as his big life experiment, he uses the Internet as a tool, as an art medium in its complexity and a platform for creating a new type of art, based on communicating — a big challenge in many concerns, also because its purpose is merely non-commercial, it does not require a membership, registration or password.

"*The Network*" represents a hybrid, simultaneously a media art project, a manifestation of philosophical ideas around the themes "memory" and "identity", a research and curatorial project, a composition of dynamic social contexts in progress, a virtual and physical network on different levels, but also a multi-dimensional event environment organised completely online, however, not institutionally structured or associated, but realised in form of an independent art project. AdC himself is acting as a hybrid of different identities, not just as an artist, but also as the programmer, multimedia developer, curator, director in different functions and other virtual and physical instances of different kind, one might even say, he is representing "*the Network*" himself, re-creating himself continuously, he exists through others.

What is now manifesting itself as "*The Network*", was not planned like that. It developed from a small cell through exploring the Internet for what is Internet specific in terms of art. One can divide the evolutionary processes abbreviated in three phases, which, however, did not follow one after another in a linear way, but non-linear sometimes parallel, at the same time or temporarily displaced.

The 1st phase started in 2000, when *A Virtual Memorial — Memorial Project Environments against the Forgetting and for Humanity* (AVM), was launched online, not more than just a raw construction of ideas, not really structured yet, but in this way a fertile soil for exploring, experimenting, and learning by doing.

Based on the artist's very personal views, perceptions and philosophical ideas about human memory, humanity and a positive globalization, focussing on how people coming from most different cultural, religious, social, political or ethnic backgrounds deal with memory and the essential questions of life, AVM grew rapidly as a multi-media online context in quite a short time and became the framework for numerous subordinated theme related projects exploring Internet specific participatory, collaborative and networking aspects by inviting artists for participating and collaborating — just to mention a few project titles: "*Memorial for the Victims of Terror*"(2001), "*Violence Online Festival*" (2002), "*Rainforest Memorial* (2003) "*Women: Memory of Repression in Argentina*" (2004) "*://selfportrait — a show for Peace*" (2006). The ancient idea of the finished and completed art project, was replaced by the new type that was ongoing, to be updated and extended this way and changing continuously, offering the visitors or users permanently new reasons to revisit the online environment again and again, resulting a kind of community on a voluntary basis. In these terms, the ideas behind AVM became the fundament of all activities within "*The Network*", how different they may be.

Based on all those experiences promising perspectives for the future, the 2nd phase (starting in autumn 2000) is marked by AdC's specific method of working on different project ideas and their realisation, and thematic and technological aspects at the same time.

The idea of a virtual museum was actually not really new, *JavaMuseum — Forum for Internet Technology in Contemporary art* — gave this idea its specific structures dedicated to the needs of a new art genre (Internet based art). The social aspects got a new dimension in form of curating, i.e. taking another type of responsibility. AdC's curating is not reduced to just selecting art works, contents and artists, collecting links and posting them

online, but he curates also virtual space, that space, that is visible on a user's computer monitor i.e, he designs/ programs specific visual contexts or interfaces for each new project realisation. Curating becomes this way an expression of a new type of artworking. JavaMuseum realised since 2001 besides some global competitions, more than 20 showcases of "netart in a global context" and hosts this way a comprehensive collection of works (1000) from the high time of netart (2000-2004). JavaMuseum stands for a wide range of projects followed in sequence.

The 3rd phase started some time in 2002 parallels phase 1 and 2. It was based on the perception that the virtual space of the Internet gets its meaning when it is confronted with the physical space. One might call it the cross-platform phase, cross-platform in terms of combining the basics of already existing or future project environments, since they showed how closely woven their structures are and how much they complement each other, on the other hand to realise new projects according to those perceptions in an exchange between virtual and physical space. But essential was, AdC had finally become aware that all those projects he had realised until now individually were all standing in a common all encompassing context, i.e a network, *The* new *Network* to be created by re-structuring anything done before went hand in hand with the new project platform to be developed. *NewMediaFest* was thought to act as a framework for new type of experimenting, see-> *Violence Online Festival* (2002-2004), followed by *[R][F]200x* → XP — *global networking project* (2004 -2007). Two of its "Memory Channels" dedicated to specific media, video and sonic art, i.e *VideoChannel* — and *SoundLAB*, became soon acting independently combining all perceptions AdC made during the years, resulting in 2006 also the foundation of *CologneOFF — Cologne Online Film Festival*, a new type of mobile film and video festival taking place simultaneously online and in physical space in cooperation with partner festivals.

From the beginning, AdC's activities were addressed to an audience, all project environments became social contexts. After *The Network* had entered the discussion as an idea, new service platforms for participating artists and curators and users in general, were created: see -> *JIP — JavaMuseum Interview Project* (2006), *VIP — VideoChannel Interview Project* (2007), AND — *Artists Network Database* (2006) — central place for organising the 1400 biographies of the participating artists and curators —, and *netEX — networked experience* — a publishing platform for announcements and calls (2005).

Long before experts were considering a WEB 2.0, AdC was already working on his he personal Web 2.0 as a kind of open system. He sees his multi-faceted work on *The Network* as his specific type of artworking, where he can develop his abilities to the full.

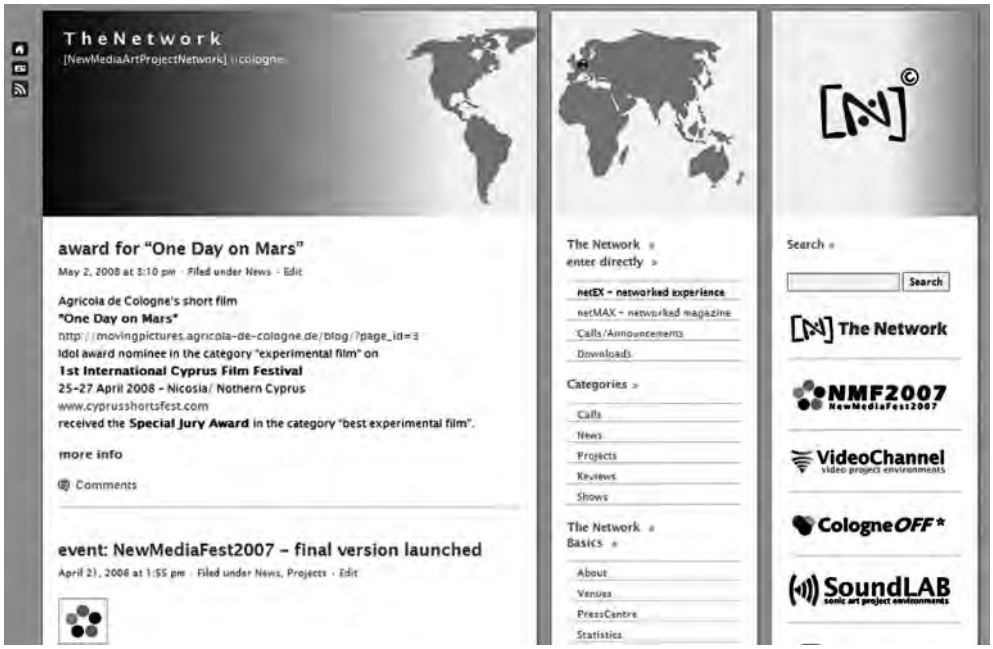
While the success of *The Network* is manifesting itself visually online to each visitor, the site statistics show how many came: 500 000 hits in 2000, and more than 8 million hits during the past 12 months (May 2007-April 2008).

Certainly, some of the incorporated project environments can be considered as completed, *The Network* as such as a dynamic work in progress, however is ongoing with an open end.

The Network ~
[NewMediaArtProjectNetwork]:||cologne –
experimental platform for art and New Media
http://www.nmartproject.net/
NetEX - networked experience (2005-)
http://netex.nmartproject.net/
netMAX – publishing environments (2007-)
http://max.nmartproject.net
AND – Artists Network Database (2006-)
http://and.nmartproject.net
A Virtual Memorial – memorial project environments (2000-)
http://www.a-virtual-memorial.org/
Memorial for the Victims of Terror (2001-)
http://terror.a-virtual-memorial.org
Memorial for the Victims of Aids (2001-)
http://aids.a-virtual-memorial.org
Tsunami Memorial (2004 -)
http://tsunami.a-virtual-memorial.org
Family Portrait (2001-2005)
http://familyportrait.engad.org/
Women: Memory of Repression in Argentina (2004-)
http://argentina.engad.org
://selfportrait - a show for Bethlehem (2006-)
http://self.engad.org
Cinematheque – streaming media project environments (2001-)
http://cinematheque.le-musee-divisioniste.org/
JavaMuseum - Forum for Internet Technology in Contemporary Art (2001-)
http://www.javamuseum.org/
JIP - JavaMuseum Interview Project (2006-)
http://jip.javamuseum.org/
NewMediaFest – festival project enviroments (2002-)
http://www.newmediafest.org/
Violence Online Festival (2002-)
http://violence.newmediafest.org/
[R][R][F] 200X - global networking project (2004-2007)
http://rrf200x.newmediafest.org/
IMPACT event series project (2005)
http://impact.newmediafest.org/
VideoChannel – video project environments (2004-)
http://videochannel.newmediafest.org/

VIP – VideoChannel Projectenvironments (2006-)
http://vip.newmediafest.org
SoundLAB - sonic art project environments (2004-)
http://soundlab.newmediafest.org/
SIP – SoundLAB – Interview Project (2006-)
http://sip.newmediafest.org

CologneOFF - Cologne Online Film Festival (2006-)
http://coff.newmediafest.org/
Agricola de Cologne site (2000-)
http://www.agricola-de-cologne.de/
Agricola de Cologne Moving Picture Collection (2001-)
http://movingpictures.agricola-de-cologne.de/



Network 2008

New media fest 2007

No Space for This Time

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"Actual and virtual coexist,
and enter a narrow circuit which constantly brings back one to the other for us."
Gilles Deleuze [1]

I wrote a first text for ISEA in 2006 about the context of the Shanghai World Expo.[2] This event is an urbanisation process, emerging in an endless and unlimited city that is under discussion for 2010. Consequently, what is being prepared at Shanghai is not simply an immaterial bridge between a universal-type event and a planetary dimension. It will be a setting for utopian realities. These will take form thanks to technologies and existing projects. The purpose is not to present a performance or an enviroment but to assert a new vision to remove the current borders existing in the world. Our research connections: from reality limits to invisible data for "rendez-vous" that are beyond our conception of space. As we said, we do not propose to add projects. We only use them to imagine and create another way of thinking up data transmissions. If physical networks and data processing exist in unlimited space, what are the new temporal limits and how can we bring them into visibility?

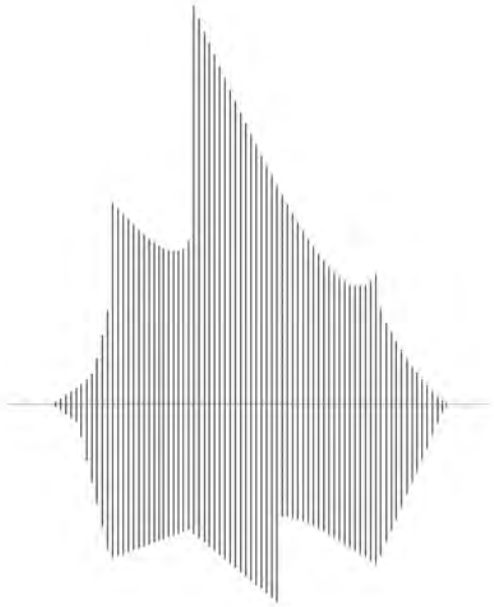
From the Philips Electronic Pavilion to urban digital life

At the time of the electronic revolutions in 1958, the creators Le Corbusier, Xenakis and Varèse, were solicited to build a pavilion for the Brussels World Expo, financed by Philips. Even if the architectural structure[3] was destroyed after the expo, the *Electronic poem*[4] is the audio-visual trace. This memory transfigures the disciplines of architecture, music and visual arts, in resonance with the technology of this period. This realization has remained singlular since this event.

The next World Expo will take place in China from May 1 to October 31, 2010. The topic of this international celebration, which awaits 100 million visitors and 165 countries, is *Better City Better Life*. Jacques Ferrier, the architect of the French pavilion, retained since March 2008, speaks about this project in terms of "technicality and sensuality, between creation and permanence, innovation and quality, action and thought, city and territory". He is trying to erase "the sterile opposition between traditional and modern France". He proposes, in the center of the pavilion, a French garden that "will be reinterpreted vertically. A soft inclined path will offer a way from the top towards the bottom".[5] Each pavilion, like a national window in a universal future-district, is thought of as a scene from a performance that we will be invited to experience or traverse.

However, new relations between human beings exist. We projected this message on an urban giant screen in Paris in 2005 with this poetic message: "You are the Network! MOBILE WIRELESS DIGITAL". In the same way, in 2006 we created a tribute to the universal architect of modernity Claude Nicolas Ledoux by staging an event on the communication networks and not by building a construction, placing this project of theatre not at the heart of the city but on a planetary perspective.[6]

For the Hanover World's Fair in 2000, the Parisian group Bleu Lumière, responsible for the IBM pavilion *Planet of Vision*, introduced in the on-line presentation of their project. Jacques Polieri's definition of scenography: "a set of pictorial, visual, technical and theorical features which allow for the creation of an image, a two or three-dimensional construction, or the setting in place of the action, in particular related to the performing arts".[7] More than ever, at this time of contemporary technologies, it is a scenographic vision across the artistic disciplines which can only create a *Better City Better Life*.



Virtualization 2008 of the Philips Pavilion 1958, Claire Morel & Franck Ancel, Paris.

From the border transmissions to a planetary vision

In his biography of Edgard Varèse, Fernand Ouelette recounts his unrealized symphony Espace, initiated in Paris in 1929: "Varèse had imagined a performance of the work being broadcast simultaneously in and from all the capitals of the world. The choirs, each singing in its own language, would have made their entries with mathematical precision. The work would have been divided up into seconds, with the greatest exactitude, so that the chorus in Paris — or Madrid, or Moscow, or Peking, or Mexico City, or New York would have come onto the air at exactly the right moment".[8]

If Varèse imagined to transcend the distances between the cities through the radiophonic medium in the 1920s and to transcend artistic borders with Le Corbusier and Xenakis in the 1950s, the various pavilions in Shanghai 2010 could be put into a network, not with a "symphonic poem" nor an "electronic poem" but certainly with a "digital poem".

At this time of "digital atmosphere", everyday data-processing and numerical networks, from one point to another on the planet, exceed at the same time not only the national borders but also the physical ones. Some of these objectives — artistic, economic, political, etc, the interface and other interactive processes, devices of collecting of data and movements, information transport, messages, texts, visual or sound designs do not deliver automatically a symbolic opening towards others and/or a free vision of the world.

The current question is not to create a relational aesthetics related to technologies but to imagine the means of connecting territories, actual and virtual, creating a world from the infinitely small to the infinitely huge, towards a sustainable development in the heart of the human cosmos. In 1958, the exchanges between the Phillips company and the creators Le Corbusier, Xenakis and Varèse were succesful in taking this direction.

The great issue of Shanghai 2010 will be a collaboration between companies and researchers to open new forms of transmission. For this reason, it is obvious that the anticipations of Bruce Sterling on the objects of tomorrow like the fascinating SPIME[9] propose one of the possible keys. The performance of *Better City Better Life* goes beyond the architecture, the dance, the music, the theatre, the visual or contemporary arts...

It is the entirety of the data-processing devices, along with news telecommunications, through its concentrated nature and its setting where there will be interaction with the visitors, via the waves and other invisible frequencies, (from Wifi to Gsm) on the site of the World Expo of Shanghai 2010 which will keep up, symbolically and concretely, the true possibility of universal creation, to try out solutions for now and for the future.

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1 Deleuze, Gilles. 1995. *Dialogues*. Paris: Champs Flammarion, p. 184.

2 This paper is also available on Internet. http://www.intelligentagent.com/archive/ia6_2_interactivecity_ancel_shanghai.pdf

3 Hundreds of pictures are available on the Internet using Google images.

4 This video document can be found on the internet:
http://www.youtube.com/watch?v=rC3OXai7W9I

5 Extract of Internet site presenting the current French project for 2010.
http://www.pavillon-france.fr/?lang=en

6 This video document can also be found on the internet:
http://www.dailymotion.com/video/xsayr_tuut-ledoux-200

7 Ancel, Franck. 2004. "Rules for Scenography." In *Jacques Polieri Scenography and Technology.* The French National Library, p. 9.

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9 More information about SPIME is available on the internet:
http://en.wikipedia.org/wiki/User:Casey_Marshall/Spime

Sensory Vision — Development of Toolkits and Training Course Using an I/O Module and Sensors

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Introduction

Multi-media communication rests on the premise that both sides, transmitter and receiver, use computers. Students learning new types of communication should cultivate their ability to create and comprehend expressions using media technology. We developed a course and toolkits for training their expressive capability. Sensing human actions is a key technical factor for creating interactive works in the field of media art and design. This course using these toolkits enables students to create an interactive installation easily and learn how to interrelate the response by sensing human actions.

Objectives

Our study aims to develop a course for education on media art and design in a society infiltrated by media technology; this course has the same intention as the Bauhaus's preliminary course (Vorkurs), which established a new style of creative education in industrialized society in the early twentieth century.

The immediate objective is to create a work that reacts interactively with human actions using sensors; the program involved in the work controls graphics, sounds, lights, or motors responding to human actions. One work is comprised of three elements: human actions, input from sensors, and response. It is not just a converter from input to output and not a transmitter to convey a certain message in a specific context. The interaction transforms the normally recognized pre-established signification into a new perceptual relationship. The course enhances students' ability to manipulate media technology.

This course addresses not only limited fields like product design or contemporary art, but also broad fields involved with the creative exploitation of media technology beyond existing media frames.

Hardware toolkit for sensory experience

To create a work for sensing human actions and processing it to a response, knowledge of electronics and programming is required. However, students of departments of design, arts, or human sciences normally lack this knowledge. It is quite difficult for them to collect and assemble sensors and electronic parts. To avoid this difficulty, we developed a hardware toolkit (Figure 1) that includes an I/O module and the parts shown in the second column of Table 1. The toolkit enables students to utilize analog and digital input from sensors without soldering.

Table 1: Contents of the hardware toolkit

	First version	Second version
I/O module	Gainer (developed by IAMAS) + Original circuit board	Original I/O module (four ports for analog input)
Parts for Input	Touch sensor, photo sensor, sound sensor, infrared sensor, rheostat, micro switch, read switch, mercury switch	Touch sensor, photo sensor, sound sensor, infrared sensor, rheostat
Parts for Output	LED, vibrating motor, solid state relay, small motor, a set of gear	NONE
Cables, etc.	USB cable, screwdriver set, circuit tester, three-core cable	USB cable, screwdriver set, circuit tester, three-core cable

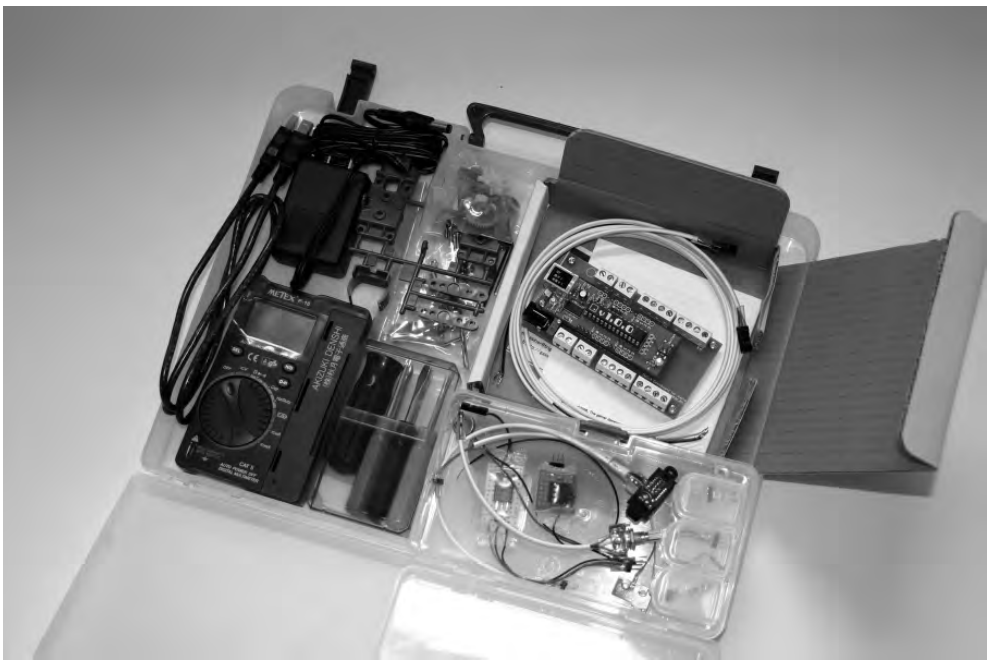

Figure 1: The first version of the hardware toolkit

Contents of the course

The course is organized in a project-based format: two students make an interactive installation as a team. The course is taught for one semester with fourteen weekly class sessions. It consists of: (1) understanding the objectives of the project, (2) understanding the hardware toolkit and basic electronics, (3) experimenting with the toolkit, (4) understanding the basics of computer programming, and (5) planning and creating the interaction.

Besides toolkits, we also prepared square wooden boxes for exhibition; their top size is 50cm×50cm and their height is 80cm. (Figure 2). Graphics as the response should be projected on the top board, or real physical things as interface should be exhibited on the box. This constrains students from making large-scale works beyond what they can manage and encourages them to formulate sensuous transfiguration by interaction within a simple construction.

Moholy-Nagy, who taught the preliminary course in the Bauhaus 1923-1928, wrote: "Their training this first year is directed toward sensory experiences, enrichment of emotional values, and the development of thought."[1] Moholy-Nagy thought that the sensory experience would be acquired though the basic knowledge of material characteristics, understanding of technology, plastic handling, and work with tools and machines. The basic principles of our learning course for sensory training share Moholy-Nagy's intentions. We name it in the media technological era the sensory vision.

Practice and results in class

This course has been taught for two years (2006 and 2007). In the first year, we required students not to use a computer monitor or projected graphics as output because we attached importance to the sensory relation between human actions and physical things without a virtual metaphor. By the restriction that physical materials should be used as interface, we expected

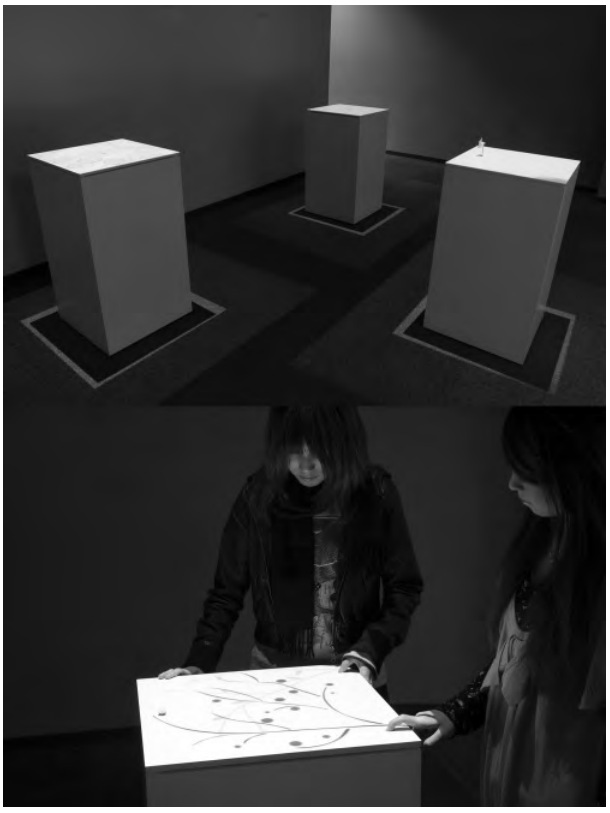

Figure 2: The box for an exhibition

an interrelation between human actions and natural phenomena or movements by the nature of physical materials like sand and water. However, works by sixteen teams revealed that students tended to bring a specific context in the interface using physical things; for example a miniature town lights up when one moves a hand over it. In addition, the appropriate craftsmanship for the physical interface was not achieved because of lack of sufficient craft skills.

To concentrate on transfiguration of aesthesia, in the second year we decided to eliminate the physical existence and adopt a virtual metaphor; that is, we made a new requirement that the installation should be performed only by projecting graphics on the top board. Sensors had to be embedded in or under the top board, and the viewer interface with the top board of the box.

Of fifteen teams in 2007, eleven teams generated animations composed of primitive graphics like circles and rectangles. Their works showed motion of graphic elements that reacted to human actions. Others used image files; for example, an animation in which a tree grows is shown when a viewer touched a small hole on the top board. In the case of using images, the response tends to be context-dependent compared to the case of generating graphics by a program.

Enhancing the hardware toolkit and developing the software toolkit

It is necessary to avoid intruding narrative or signification on the interaction from the viewpoint of training creation of interrelations beyond ordinary aesthesia. Practice in class indicated that it is appropriate to confine the aspect of the response to movement of primitive graphics generated by a program. To suit this, the hardware toolkit has been revised. Table 1 shows the difference. We have developed an original I/O module with only analog inputs. Further, we have developed a software kit consisting of numerous sample programs that show various patterns of simple movements of primitive graphics such as circles. The examples of basic patterns are one-direction, shuttle, rotation, and oscillation. To make many derivative motions, we have caused variations in each pattern by moving elements, their size and traces. The software kit could give students sensory experiences and lead students to consider how to create new interrelations of graphics movements and human actions.

The revised hardware toolkit and the software kit particularly focus on sensory training by eliminating narrative or semantic context so that they can work effectively as basic training for various fields in media art and design.

Acknowledgement

We appreciate the contribution offered by Takehisa Mashimo and Eri Sakka. This work was supported by Doshisha Women's College.

Reference

1 Moholy-Nagy, Laszlo. 2005. *The New Vision*. New York: Dover Publications, p. 18. Originally published 1938.

Locating Cyberfeminist Art in Singapore

Irina Aristarkhova

This paper is a part of the panel "Locating Cyberfeminism" that seeks to present a varied set of cyberfeminist theories and art practices by situating them within specific political, technological and cultural contexts. While presenting papers that address issues of cultural difference within cyberfeminist art and aesthetics, this panel also attempts to widen the possibility of how cyberfeminism could be imagined. It could be enabled through the inclusion of projects, theories and practices that take place geographically and/or conceptually outside of what one can simplify as Western cyberfeminist trope. This trope often finds its origins in individual identity and body centered analysis. While acknowledging their immense influence on today's situation with women, art and technology, this panel seeks to locate them within specific histories of Western (often white and middle-class) feminism, thus, opening up spaces for other histories and genealogies. Without dividing too neatly Western and non-Western locations, all presentations aim at contributing 'other' cyberfeminisms, often relying on comparative perspective to be helpful in our recognition of the politics of location and histories of cultural difference within this growing field.

In my paper I seek to provide a comparative analysis of cross-cultural art collaborations that are focused on the art works of subRosa cyberfeminist art collective. First, I outline the terminological difficulty using the concept of cyberfeminism for the purposes of my analysis. It is possible to argue very effectively for doing away with either parts of cyberfeminism especially today and in post-colonial situation: *cyber* art for being a passing fad and not political enough, while *feminism* portion for being assumed as a universal struggle for all women around the world, with a defining standard set, arguably in a colonialist fashion by Western white middle class women. However, it is more effective, I claim, to move beyond the terminological battles towards using this term as an umbrella for a variety of conceptual and creative practices that deal with gender and technology in the same fashion as ecofeminism has done for women and environment. This section of my paper will end with a certain takeover of this term that has been somewhat out of fashion lately, obsolete and therefore, becoming interesting again, especially in cyberfeminist post-colonial and post-communist 'periphery'. Periphery is usually defined through working with art movements and concepts which are old and left behind by creative intellectual centers of the Western centers. The culture of innovation and creative consumption is looking for the next big thing, while cyberfeminism, like the music of the 90s, has become a rarity once again.

Second, I move on to establish the work of subRosa cyberfeminist art collective as a rare example of working with risky and unpopular topics in the area of art, science and technology: namely, issues of class, race and cultural difference in relation to technology and latest biomedical sciences. This work is not so unique in other parts of the world, and unites them with many artists who seek to combine "art, activism, and politics to explore and critique the effects of the intersections of the new information and biotechnologies on women's bodies, lives, and work" (from www.cyberfeminism.net). Even though new media and electronic art scene has been slow in recognizing the importance of class, race, sexual or cultural difference, today it is catching up. After all, how long can we be inspired by our own merger with the machine? Often this recognition manifests itself as an exotic element, a spiritual or political "add-on" from places that are foreign to the mainstream ear (in terms of gender, it often leads to some references to 'those Asian women assembling computers'), rather than attention to wider and more fundamental processes of economic and cultural imperialism. Therefore, I argue that certain subRosa's works exhibit, albeit indirectly, what Derrida called *globa-latinisation*, especially international collaborative works. SubRosa's insistence on recognizing global differences among women, being as 'old-fashioned' as cyberfeminism, is revealed in their texts and aesthetic processes, and is explored in my paper. Specifically, I am going to focus on the way in which subRosa deals with reproductive biomedical technologies.

On the other hand, I argue in my paper that subRosa's international art collaborations make clear the differences in proliferation of and attitudes toward technology between Euro-centric tradition and those who work on so-called 'periphery' (from a Western point of view). Specifically, I analyze collaboration between subRosa and Singapore artists and researchers that took place in 2003, focusing on the work of Margaret Tan. New media technologies, especially biotechnologies, have become part of everyday life, art, popular culture and legal context more in some countries than others. To ignore cultural aspect of this difference is to obscure complex relation between economy, politics and culture, as pointed out by many, especially Max Weber in his book "The Protestant Ethic and the Rise of Capitalism". It is possible to argue that if one is to pick an area of the world where technology is a prominent part of culture and everyday life, the following countries come to mind in particular: Singapore, Hong Kong, Korea, Japan, and Taiwan. To include 'gender' into this process of proliferation of new information and biotechnologies in Singapore, is to complicate the question of collaboration between subRosa and Singapore researchers/artists even further. This part of my paper deals with examples of such complicated collaborative process.

Comparative perspective allows me to tease out differences in relation to gender, art and technology, as well as the overarching themes in subRosa's collaboration with Singapore participants. In summary, my paper seeks to be an example of what Chandra Mohanty calls *the feminist solidarity or comparative feminist studies model*, applied to new media art and theory.

Note: This paper is part of the panel presentation — Locating Cyberfeminism.

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The *House Of Affects* Project
Correlating Digitally Distributed Narrative to Adaptable spaces

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The *House of Affects* project is comprised of the construction of an interactive audiovisual environment, and its objective is to use several video projections in a dark room. The concept was developed with a consideration for cinematic narrative space, and so allows the user to navigate a virtual space constructed specifically by film, by means of projections. What is under analysis is the traditions of thought, both in terms of space and drama, that might help us to understand better the processes at hand in the conception of spatial narrative and henceforth guide and inspire new forms of moulding game, story and people in space.

A proof-of-concept work in progress, the interactive cinematic narrative installation projected inside a responsive architectural space designed with the aid of the computer, *House of Affects* is a conceptual framework for human-computer interaction on narrative expressive spaces is presented. It offers some grounds for both discussion and practice of cinematic installations in structured exhibition spaces.

The installation is attached to the exhibition environment (host) as an epiphyte,[1] and by doing so it correlates to the field of behaviour framing it as a field of performance. Epiphytes adapt their structural organization, and therefore their form, to their hosts. The flows of pedestrian movements on the exhibition floor are interpreted as guiding forces for responsive organization of the spatially correlated narrative experience and as dynamic patterns with performative potential that the structure of the installation seeks to engage with.[2]

The hereby proposed structure, which acts as a space delimiter — for the site of installation is meant to be a gallery space, usually characterized by its emptiness — is developed with a consideration to its self-referential narrative content. This is achieved by a design adapted to the performative qualities of the space and its programmatic attributes, by means of the formation of niches to accommodate the interaction between visitor and the narration.

The installation, developed with a consideration for cinematic narrative space, will allow the user to navigate a virtual space constructed specifically by film, by means of projections. These projections, rather than dividing the space into real and virtual (i.e., rather than consisting of frames projected onto walls), will be fused into it.[3]

The choice of projecting film onto real spaces engages that synergy which emerges between the virtual and the real. Users are able to navigate between several of the places presented by the story, and to search for narrative content which is in turn triggered by users' movements.

When users of the *House of Affects* (who become participant actors as they view and construct the narrative), revisit the times and spaces of a past existence, the narrative is liberated to make full use of the spatialised time of the installation. The audiovisual space itself is created as an easily adaptable architecture which transforms the experience of visiting the *House of Affects* into a matrix where spaces for filmic interactive experience are generated to support the development of the relationship between movie time, the duration of the movie, visiting time, the duration of the visit, and the time-image of the given narrative. It is important to emphasise again that the interactive presentation of audiovisual narrative presupposes a subjective (and in that sense Bergsonian) perception of narrative cues, making the time of exploration or visit of the installation a personal time-image and thus actualizing a personal time-narrative.

The position of the visitor in the room, in the present, becomes the centre of the experience, which is realised in the audiovisual performance. The spectator's relationship to time, space and the performance is transformed through a new approach to emotional affect, enabled by digital technology's creation of the responsive 'theatre' and viewing-frame.

The imaginative game-play of children inspires *House of Affects'* concepts for simulation and narrative experience. For a child, play as game, play as story, and play as acting may be seen as a continuum of imaginative experience.

It is this *subjectivation* of story and its inherent seizure of a personal time that the *House of Affects* seeks to celebrate. During imaginative play, the Stanislavskian "what if?" — that is the presentation of a given dramatic situation (Stanislavsky, 1963, 1980) — gains different dimensions. In these circumstance, "What if" can be translated as the given set of circumstances that place a character, and hence the 'actor' playing the game, in a particular situation. "What if…" sets up the dramatic, given rise several "And now..", here understood as the subset of objectives that each projection proposes to the visitor. This then translates a sense of temporality that is part of the narrative experience.

This engagement with the moment is described by Ryan (Ryan, 2001: 141) as 'Temporal Immersion', and it includes not only discursive techniques, but also the phenomenological situation of the reader/viewer/user in the creation of a "personal" time.

The projected image is a sparkle of individual imagination; but as Bachelard (Bachelard, 1987) argues, imagination is not about forming images, but rather about de-forming them. By deforming the image of the dream, one shapes the dream; by deforming moving images, one shapes cinematic spaces. Cinematic time becomes hence not only the time in the images, it becomes the time of the player/actor immersed in narrative space.

The employment of digitally-generated environments to be inhabited by a "player" raises the issue of human presence in the space-less environment of the computer. Such environments are designated as hosts for narration, by rendering time and space through the sustainability of the gameplay (see Ryan 2001). The *House of Affects* experiments with the fusion of the digital and the physical, from which emerges the embodiment of a personal space, developed by the synergy of digital worlds in physical spaces. It is important, hence, to emphasise that this project follows a directorial approach to audiovisual narration, in the sense that the vistitor/user, as Murray would put it (Murray 1997: 152, 153) is an agent in an authored environment that implies that, like in cinema emotional cues are given to make the narrative progress. Though the space and time choices of the users affect the presentation, it is not their emotions that the system responds to in anyway, rather their movement through both physical and virtual space and the duration of sojourning in given scenes.

We aimed as well at using Stanislavskian operative categories of "given action", "objectives" and "dramatic units" as a frame of building narrative blocks of game that bring narrative and dramatic (and hence emotional) added value to the process of immersion. By merging physical and virtual space, narrative and game we aim at resolving partially the contradiction between narrative and ludology. In this sense game-play becomes indeed a merging of personal and affective experience within a spatial narrative.

The selection of paper tubes as the structural component grants us the flexibility of using a cheap, lightweight, replaceable element for construction.

By creating an easily adaptable model of architecture for audiovisual space we aim at taking the experience of the *House of Affects* and transforming it into a matrix of construction of spaces for filmic interactive experience. These are not to be dependent on the specific narrative content that we created for this experience, but rather be able to introduce whatever entertainment or information the designers and communicators want to present to the visiting public.

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Notes

1 An epiphyte is any plant which grows upon another living organism — they are not parasitic upon their hosts, but derive physical support from them. (Oxford English Dictionary Online)

2 For previous experiments on similar issues see (Roudavski, Artopoulos with Penz 2006).

3 All of his work can be understood as a rejection of the frame, insofar as the frame functions to delimit the different orders of representation, in favour of an environmental co-presence, which Kiesler dubbed "Correalism". (Hubert 1995) Furthermore, Juhani Pallasmaa (2006) talks of the role of cinema as a new way of experiencing place and time and of the blurring of the boarders between real and imagined worlds that occurs in cinema by means of lived images.

ground<c>: The Enablement of Creativity in a Metaverse

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The metaverse has taken huge steps in the realization of a realm where awareness between participating agents is taken to an entirely new level, providing not only interaction and participation but also "presence", creating far deeper reaching implications than what a mere novel display system or tool would indicate: New forms of embodiment, of presentation as well as perception, and of autopoiesis are being materialized. Artistic practice constitutes a field requiring specialized creative strategies for the implementation of this novel condition.

While Second Life is used by hundreds of educational institutions (Lagorio 2007), the lack of concern over whether the unique properties of this novel human condition can be exploited to develop novel learning strategies is noteworthy. The overriding majority of SL universities have appropriated campuses in which learning activity that is entirely cut off from the rest of the metaverse tends to occur. Indeed, most of these campuses have been built as exact replicas of their physical counterparts, thus metaverse learning activity is considered as a mere extension of education in the physical realm, mostly implemented by faculty whose presence in the metaverse is limited to this activity alone.

McPherson (Mcpherson 2004) proposes that the design of online learning environments should be based upon pedagogical models appropriate to a specific educational scenario. For ground<c>, this model is the Groundcourse (Ascott 2003), Roy Ascott's art educational methodology practiced during the 1960's, implemented through behavioral exercises, role-play and ''irritants'', operating under the tenet of Dewey's learning theories (Dewey 1921), and Cybernetics; the ultimate aim of which was to create an environment which would *"enable the student to become aware of himself and the world, while enabling him to give dimension and substance to his will to create and change"*, achieved through a drastic breaking down of preconceptions related to self, art and creativity. Thus an enviroment that fostered the rethinking of preconceptions and fixations with regards to self, society, personal/social limitations, art and all the ensuing relationships was provided through a carefully coordinated range of exercises involving problem solving, that could at times seem absurd, even terrifying in that they all entailed behavioral change. Empirical enquiry was balanced by scientific study; irrational acts by logical procedures. At the core however, was a concept of power, the will to shape and change, this indeed being Ascott's overriding educational goal. Thus, *"the student is bombarded at every point with problems demanding total involvement for their solution. For the teachers, the formulation of problems is in itself a creative activity..."*

One such problem was that of acquiring and acting out a new personality, which was the converse of what they would consider to be their normal "selves." These new personalities were monitored with "calibrators" that read off responses to situations, materials, tools, and people within a completely new set of operant conditions, students forming hexagonal groups which had the task of producing an ordered entity out of substances and space in their environment, with severe limitations on individual behavior and ideas. These formed the "irritants", i.e. the educational aids of limitation in the pursuit of creative enablement. Students were then invited to return to their former personalities, making a full documentation of the whole process in which they had been engaged, searching for relationships and ideas, reflecting and becoming aware *"of the flexibility of their responses, their resourcefulness and ingenuity in the face of difficulties. What they assumed to be ingrained in their personalities they now tend to see as controllable. A sense of creative viability is being acquired"*.

For ground<c>, which is at its core a design project, Dewey's proclamations on the importance of environmental design in education are crucial: While the Groundcourse, with its behavioral restraints and irritants took into account the value of both experience and environmental stimulus, ground<c> will be able to put into practice Dewey's convictions to even further use by designing the entire architecture to suit the needs

of experiential learning by taking full advantage of the affordances of the virtual. Real world constrictions would not have enabled the design of spaces for the Groundcourse that were thoroughly changeable, interactive and indeed unpredictable in the 1960's. Spaces where space itself could become a hindrance, an obstacle to be surmounted — in short an irritant. Space free of gravity, space with increased/decreased collision detection, space that shrinks and expands, space that is beyond the users control can be used in series of assignments to enhance perception, visual observation and in defining behavioral experiments to aid creative enablement in ground<c>. Indeed such space need not even be perceived identically by multiple learners: It is entirely conceivable to create space that presents itself with differences, ranging from the subtle to the drastic, to different users at the same time. A 3D construct, incorporating highly interactive/kinetic elements, that will provide an unpredicatable, changeable learning environment which can be adapted to specific needs of instruction/experience with great ease. Indeed these spaces will constitute the fulcrum of all learning activity and the entire campus will be structured around them. Complementing these will be static components for auditoriums, meeting areas, display and performance areas etc. The overall manifestation will be a strongly interconnected set of structures, based upon forms of growth and visionary architecture, utilising the sky, the earth as well as the ocean of the metaverse; creating a visionary/virtual campus for creative activity in that geography. In fact what has been described here can be summarized with one word alone: A Holodeck.

The Groundcourse emphasising behavioral change as a founding principle for enabling creativity, utilized the enactment of new personalities as educational strategy. This corresponds to present day role-play in the metaverse. Research conducted in cyberpsychology substantiates this importance of role-play, the aquisition of alternative characters and indeed the aquisition of many alternative selves for behavioral change not only within the virtual environment itself but also, by extension, in real life (Yee 2007). Beyond role-play, the importance of playful activity itself as well as the building of concrete objects, i.e. toys, in the development of creative thinking, as proposed by Papert (Papert 1990), is yet another key concept that can be adapted with facility to the Groundcourse methodology. Thus much insight can be attained from a critical examination and re-interpretation of the Groundcourse philosophy as a pedagogical model for the enablement of creativity in a metaverse (Ayiter 2008).

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e-Dance: Relocating Choreographic Practice as a New Modality for Performance and Documentation

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This paper identifies new practices and possibilities at the intersection of Dance and e-Science. It is particularly concerned with the complexity of the concept of 'location' in relation to internet enabled performance practices. Julia Glesner provides a useful analysis of spatio-temporal relationships in internet performance: "telematic and distributed performances dissolve the spatial (but not the temporal) unity between performers and spectators and distribute the scenic space into diverse remote sites".[1] This paper considers the ways in which the *e-Dance* project[2] is formulating a new mode of choreographic practice that engages with this dislocation in the co-dependent interrelationship of space and time. This new modality is distinct from existing on-line compositional practices such as 'hyperchoreography'[3]and 'hyperdance'[4] and as a result of recent advances in Access Grid[5] and Hypermedia Discourse[6] technologies, is also distinct in form and process from 'distributed choreography'[7] and other telematic choreographic practices. The research for this paper has emerged from the first six-month's findings of *e-Dance*, a two-year interdisciplinary practice-led project bringing together practitioner/academics[8] from the fields of Dance and e-Science, in a unique collaboration across three UK Research Councils.[9]

e-Dance repurposes the Access Grid (AG), an online, meeting environment using advanced video-conferencing and integrated knowledge mapping technologies, as a context for telepresent performance, and hypermedia documentation of this practice as research. Automated annotation of the media combined with human annotation using hypermedia discourse tools provides a rich, structured data repository, both for choreographic reflection in/on process and with the potential to support the subsequent construction of hypermedia research narrative better suited to non-linear argumentation and presentation. Through this convergence in the visualization of both spatio-temporal structures and discourse, the project addresses two intersecting questions. Firstly, what unique opportunities does the distributed AG environment provide for developing new approaches to choreographic process/composition and for capturing/modelling practice-led research? Secondly, how can choreographic knowledge and sensibility enable e-Science practice to make its applications more usable within performance/arts practice-led research?

Central to an interrogation of these questions and the locus for the interdisciplinary discourse, are multifarious understandings of space and in particular the concept of location. The paradoxical sense of the 'located' in the non-co-located environment of AG provides a fruitful intersection for a creative and critical engagement across the disciplines. *e-Dance* is focused on the integration of live and mediatised dance performance across multiple, remote sites. It is exploring this as a context in which choreographic process is radically reformulated and *relocated*. Like Bolter and Grusin's "remediation"*x*, 'relocation' articulates a similar semantic movement or procedure. Yet, this is not only concerned with the conceptual/creative/idiomatic shift from one medium

to another but also with shifts in the substance/context/affect of space. Given that the medium for choreographic practice, in its most essential terms, is the body moving in space and time, this radical revisioning has ontological and epistemological implications for the discipline. Johannes Birringer suggests that telepresent performance fundamentally challenges traditional formulations of compositional process and structure. "This is no longer the modernist notion of composition; rather…(it) resembles a kind of postproduction of recording/recorded data, which in the case of dance includes bodily movements, gestures, sensations. The emphasis has shifted from the object of representation to the emergent situation, and the materialization of technology, itself."[11] Performance within an AG environment is conceptualised and practiced as a 'live' phenomenon, in both the sense of actual, co-present activity and virtual non-co-present activity and the intersection between the two. In other words performers and spectators are co-present in physical spaces and simultaneously share multiple, virtual locations. Within an AG performance node the performers engage in live performance which is fed back to them and to other remote locations through streamed, wall-sized audio-video media. Several video cameras are used to provide a multi-perspectival view of the dancer's body and the performance space in each AG node synchronously. This streamed media can be recorded and re-distributed to remote locations synchronously or asynchronously.

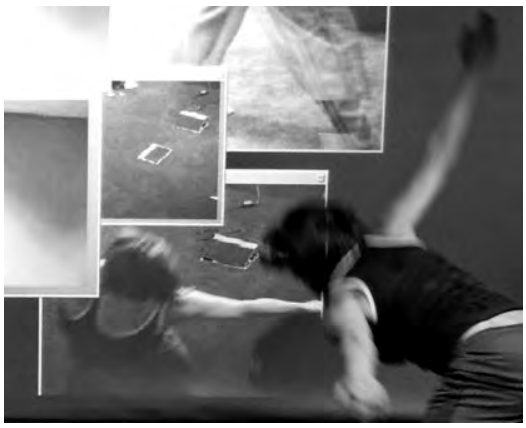

Figure 1: Access Grid improvisation by dancer Catherine Bennett during an *e-Dance* research intensive at Manchester University, UK, February 2008. Photo by Helen Bailey.

The 'relocation' of embodied improvisation/composition into this environment enables, indeed foregrounds, a critical engagement with the subjective experience of 'place'. It is through the dancers' engagement in this environment that 'place' is performatively constructed. As Jeff Malpas sets out, 'place' is a complex convergence of philosophical concepts that mesh space and experience as essential components of identity.[12] The telepistemological framework articulated by Goldberg[13], is essentially concerned with the concept of knowing at a distance and provides a useful counterpoint to the ontological status of place in this context. Lefebrve[14] and Bachelard[15] provide key frameworks for a non-Euclidean, social formulation of space and spatialities. Specifically the dancers' relationship to the AG environment involves an iterative cycle, which critically and creatively engages with the disaggregated space-time relationship. The performers view their movement as a form of 'topological "mapping"'[16] of the embodied experience and proprioception within this mediatised landscape.

Projection of multiple video streams onto multiple surfaces provides the telematic performance interface. The performers interact with and through these virtual image-spaces. Nick Kaye suggests that such examples of multimedia performance "…emphasizes a series of divisions and multiplications in which key figures and themes return: the division between video time and performance time; between video space and performance space; and the multiplication of media in the theatrical re-framing and performance of mediation."[17] Project software developments have enabled each video window to be resized, the 'frame' can be changed and the opacity/transparency of the image can be altered in real-time. Compositional relationships between video streams, in terms of the proximal relationship of the windows can be altered in real-time, saved and replayed asynchronously. Technical developments have been made using Java and the Java Media Framework (JMF) combined with Freedom for Media in Java (FMJ) additions. Streamed media formats include codecs compatible with the Access Grid toolkit and performances can be transmitted into any AG venue. In this environment embodied choreographic practice is relocated into live camera-editing/framing and therefore a form of live cinema or filmmaking. The creative potential of AG is not as a neutral location but as a multiple, faceted clustering of frames, planes, perspectives and positions that collide and interact by virtue of their sheer proximity. Anna Friedberg, in her wide-ranging and innovative analysis of the window claims, "Like the window, the screen is at once a surface and a frame. The screen is a component piece of architecture, rendering a wall permeable in new ways; a "virtual window"… adds new apertures that dramatically alter our conception of space."[18]

The relocating of choreographic practice into the virtual distributed environment of AG collides narrative, memorial, embodied, experiential, perspectival,

Figure 2: Dancers Catherine Bennett, James Hewison performing *Space:Placed* an Access Grid performance event during an e-Dance research intensive at University of Bedfordshire, Bedford, UK April 2008. Photo by Martin Turner.

geometric, socio-political, geographic space and spatialities. *Relocation* therefore becomes a procedure of appropriating and refashioning spatial concepts, practices and experiences. In other words, it addresses the reflexive interplay of space and event[19] that is so significant to the performative composition/construction of both dance and subjectivity. The innovative nature of the *e-Dance* project is in the reflexive relationship between the disciplines established in the collaborative interdisciplinary methodologies that have been developed by the team. These methodologies support a speculative, playful, engagement with the technology that enables a simultaneous critique of the systems under exploration. Tim Etchells states that contemporary performance '… must take account of how technology […] has rewritten and is rewriting bodies, changing our understanding of narratives and places, changing our relationships to culture, changing our understandings of presence.'[20]

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Antipodean Media Ecologies: Journeys to Nowhere and Back

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> "They discovered that there was another world on this planet, where the cloudy sky produced a milky green light that reflected off an icy ground, uniformly illuminating the air around them as if the landscape were glowing in the dark. It was a landscape without matter, only light. There was neither luminous source nor shadow, only reflection and incidence" (The Association of Freed Times (AFT) 2005, 299).

> "Now that the cloud was there, I began to doubt my memory, and to be uncertain whether it had been more than a blue line of distant vapour that had filled up the opening" (Butler 1985, 56).

In summer 2005 The Association of Freed Times (AFT) published an article in *Artforum*. "El Diaro del Fin del Mundo: A Journey That Wasn't" described environmental damage to the Antarctic ice shelf and the subsequent mutations occurring within the Antarctic ecosystem. One of these mutants is rumoured to be a solitary albino penguin living on an uncharted island near Marguerite Bay. The article documents French artist Pierre Huyghe's journey to find the island and its mysterious inhabitant, and forms the first part of an event that culminated in a musical on the Wollman ice rink in New York's Central Park, where "in accordance with a principle of equivalence, a symphony orchestra 'plays' the form of this island" (Leydier 2006, 33). The expedition, film, installation, narrative and performance *A Journey that Wasn't* documents European imaginings of elsewhere, while at the same time suspending relationships between fiction and reality. Questions remain over whether Huyghe and his team undertook the trip, and if so, what it was they found there. "Perhaps, they reasoned, desire itself might produce the island" (AFT 2005, 299).

In 2004 Australian artists David Haines and Joyce Hinterding undertook a residency in Dunedin New Zealand where they filmed source materials for their installation *Purple Rain*. *Purple Rain* documents the destruction of a virtual (yet real) montage of New Zealand's southern alps by analogue broadcast frequencies. The artists describe the effect as a "mountain falls through radio waves" (Haines and Hinterding 2003). In the installation large television antennas hang from the ceiling. Reading the electromagnetic energies passing through the space, the antennas generate waves of sound which motivate an avalanche on the projected mountain. In a literal correspondence, the sound both causes and prevents the snow to fall. The actual material disintegration of the image is dependant on the off screen radio energy. The mountain itself is also not present, but created though logarithms of data. This is no longer a specific mountain but a generated amalgam of digital memories of mountain-like forms. The visual image is nothing more than information made visible and set into motion by the shifting surfaces of the sound waves, which corrupt and control its obedience to gravity. The work then largely occurs off screen in the interstitial spaces of transmission. The sound is tremendous, yet the damage is minimal.

Purple Rain is part sound collected off screen and made visual, and part visual image degraded and frozen by the actions of sound (Haines, 2004). In *A Journey That Wasn't* Huyghe takes a different approach, distributing the source and impact of the sound across hemispheres. On a wind swept Antarctic island the orange safety-clad artists are seen unfurling a giant inflatable structure: part weather balloon, part monolith. The "experimental device … translated the island's shape into a complex sequence of sound and light, not unlike a luminous, musical variation of Morse code" (AFT 2005, 300). We see the cautious approach of familiar animals and then for a fleeting second a small white creature circles the device before disappearing into the weather. "It stood upright, perhaps a few feet tall. It blinked its round eyes, unaware that anyone had been searching for it all these weeks" (AFT 2005, 301). The sounds of the encounter were returned to New York where Joshua Cody rendered them into a composition ultimately based on sonic data derived from the topography of the island. The

composition formed the basis for the re-introduction of the albino penguin to Central Park's uncanny world of black ice and howling winds.[1]

media ecologies

This paper narrates an engagement with natural environments disturbed and somehow remade by technologies of sonification, visualisation and exploration. These works offer fascinating documentation of the shifting powers of new media as they map antipodean space. Haines and Hinterding make visible the magic of sonic forces as radio waves are seen to move mountains. Huyghe seeks an intangible engagement with a mythical creature that is made real by documentation. *Purple Rain* and *A Journey That Wasn't* use media to reconsider narratives of the natural environment. But more than this, they suggest a different kind of structuring of our understanding of media that is not focused on the artefact but on its environmental interrelations. Something else is being formed: a meditation on the relationships between the natural world as located in some elsewhere space of the antipodes and the communications networks that mean that these spaces are neither pure nor innocent. In his pioneering work conducted alongside Marshall McLuhan, Neil Postman wrote: "media ecology is the study of media as environments … their structure, content, and impact on people. An environment is, after all, a complex message system which imposes on human beings certain ways of thinking, feeling, and behaving" (Postman, 1970, 160). Complex message systems involve relations of transmission and communication. Haines and Hinterding make us particularly aware of how transmission flows across and through material forces. The transmission waves that seem to disturb the tranquillity of the mountain scene do so by mapping fluctuations in communication. By watching the screen and listening to its associated sonic systems a viewer pieces together off screen and on screen. This process suggests an investment of presence in sound. A listener has to be there to hear the sound, for it to be communicated.

elsewhere

As media ecologies, antipodean ecosystems are not separate to the communications technologies they embody. Each work maps a zone of activity — an event rather than an artifact. Huyghe takes a receiving station to Antarctica and translates the shape of the island into noise. The hums, clicks and buzzes produced sound like animal communication, at the least; it seems to be enough to summon the penguin.

Because they are manifestations of systems, ecologies cannot be dissected, and individual segments cannot be analysed in isolation. The borders of such systems are constantly in flux. Huyghe says "there is a need to produce zones of not-knowing from which stories and monsters might emerge" (Leydier 2006, 31). This desire to turn fiction into fact is written into the history of the southern antipodes. The South Island of New Zealand was a stepping off point for many early explorers of Antarctic regions.[2] In the 1880s British writer Samuel Butler travelled to New Zealand, and set up a successful sheep farm that he named Erewhon (no-where). The farm became the setting for a tale of societal control. In *Erewhon* Butler recognised an ecological intensity that heralded a terrifying shift in the relations of nature to technology. Butler's observations of machinic ecology question the tension between real fictions and virtual potentials as rendered through contemporary media technologies. Like *Purple Rain* and *The Journey that Wasn't*, Erewhon is a media fiction that blurs distinctions of real and virtual.

In each case a journey is undertaken, however its representation is not diagrammatic, nor diaristic. Butler travels over the Southern Alps to find a verdant green place where it appears all technology has been eliminated. Haines and Hinterding have constructed a space that can never be elsewhere because it is always infected by here, by the radio waves that are present amidst us. Huyghe carefully restages the presence of the penguin without turning it into an eco-touristic trophy.

Media relationships are never singular. In one location radio transmissions move mountains and in another, they summon mysterious creatures. Manuel DeLanda writes: "ecosystems involve processes operating at several simultaneous time scales." (DeLanda 2003, 119). Media ecologies involve the movements of time and space, through the mediations of communications technology. The media fictions highlighted in these works include the virtualised time and space of the antipodean journey. And like any ecology, paying attention reflects our current mediated location while allowing a glimpse of no-place.

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1 The location of Central Park is not incidental. In the mid 19th Century, Frederick Law Olmsted and Calvert Vaux designed Central Park to reflect the lost wilderness of Manhattan. It was a utopian gesture designed to remind its inhabitants of an elsewhere rendered distant by time and urbanism.

2 New Zealand has had a permanent base in Antarctica since 1958, see http://www.antarcticanz.govt.nz

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Information through Sound:
Understanding Data through Sonification

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Introduction

The turning point in the film *The Hunt for Red October* occurs when the sonar expert plays an apparent recording of underwater magma displacement. When he speeds it up tenfold, a rhythmic characteristic emerges that is unmistakably human-made: a new form of Soviet submarine.

While Hollywood has never been renowned for historical or scientific accuracy, the idea of detecting valuable information through sound is neither far-fetched nor fictional. In our Information Age, new forms of gathering information are constantly being created. However, this does not necessarily lead to increased understanding. In particular, managing crisis situations or monitoring infrastructures requires the ability to interpret incoming information from multiple sources. With new sources of information constantly becoming available, the challenge becomes how to process it effectively, avoiding *cogmenutia fragmentosa*.

As we navigate our way through life, the eyes and the ears play complementary roles in giving us information about our environment. Yet in research fields, the eyes predominate, as datasets are typically presented through visualization. While composers have been using sound to represent subjective information for centuries, many researchers are beginning to look to a new form of composition, *sonification*, as a means of representing objective information. The authoritative source for this area is the International Community for Auditory Display (www.icad.org), with focused efforts being carried out in interdisciplinary facilities such as SonEnvir in Austria (http://sonenvir.at) and the Sonification Lab at Georgia Tech University (http://sonify.psych.gatech.edu/).
Here, we'll present an overview of sonification's benefits and discuss two projects currently in progress.

Sight and Sound

Visualization has the benefit of being synoptic, and has a well-established vocabulary for conveying information with different types of charts and graphs. However, studying large amounts of data with the ears offers a number of advantages. Small-scale variations may be "magnified" if they are mapped to a quality such as pitch, to which the human auditory system is particularly sensitive. The auditory system is also highly adapted for following multiple streams of information. That is, listeners can readily apprehend a number of simultaneous melodies if they are presented effectively. Thus, sonification is an effective way to display a multitude of signal processing operations simultaneously, with each being represented as a line of counterpoint, a series of chords, or a succession of musical instruments.

Sound is also well suited for representing dynamic, changing events. As in the cinematic example above, the rate of playback may be adjusted arbitrarily, allowing

data that occurs over large time periods to be played back over much shorter timeframes. While multiple time series may possess similar time-dependent patterns, they may in fact be occurring on different time scales, making the differences and similarities in dynamic patterns immediately apparent. Sonification provides the benefit of a clear distinction between time series, much like discerning between a waltz and a march.

Monitoring vs. Analysis

There is a distinction to be drawn between *monitoring* and *analysis*, both of which can be served by sonifications. Monitoring refers to detection of known conditions, with obvious alerts making clear when action needs to be taken. Analysis takes detection a step further by illustrating previously unknown conditions, allowing new patterns to be recognized. The case studies that follow have examples of each of these facilities.

Case Study 1: Heart Rhythms

In an earlier work, one of our authors (MB) used sonification to study cardiac rhythms.[1] By sonifying time intervals between successive heartbeats occurring over time spans on the order of hours, sonified representations were beneficial in identifying unhealthy cyclic patterns associated with obstructive sleep apnea. These sonifications have subsequently proved useful as general introductions to physiological health, making distinctions between healthy and diseased states easy for uneducated listeners.[2]

Scientists who use complexity theory as a framework to study human health and the control of human movement are now beginning to propose that the changes in highly regular physiological and motor behavior patterns are biomarkers of ill health and disease. In particular, when presenting such ideas to audiences that are new to this conceptual framework, sonification provides a direct entry point, clearly highlighting the droning or obviously cyclic sounds of ill health and frailty.

Given the auditory system's strength in detecting patterns, there is the possibility of expanding upon this work as a means for patients to monitor their own cardiac health. Patients who have suffered from heart failure frequently need to follow a regimen of diet, medication, and exercise to maintain proper levels of blood flow. After a period of hospitalization following heart failure, patients are vulnerable to relapse — roughly $^1/_3$ of patients are readmitted to hospitals within 90 days of discharge, a situation that is both costly and a drain upon resources. Patients are often unaware that they are at risk until their condition is advanced and re-hospitalization is necessary.

At present, many patients wear small, non-invasive devices that monitor heart rate and respiration levels. Data from these devices could be uploaded to a secure Web site and sonified, allowing patients to monitor their progress. When unhealthy patterns begin to emerge, patients could consult their doctors, and routine interventions could be taken that prevent the need for re-hospitalization.[3]

Case Study 2: Songs of Computer Networks

Penn State's newly formed Center for Network-centric Cognition and Information Fusion (http://ist.psu.edu/facultyresearch/facilities/nc2if/) addresses the issue of *data fusion* — managing, combining, and correlating the ever-growing numbers of available information sources and making useful interpretations of emerging events. Along with visualization, sonification is regarded as an essential component of multi-dimensional information streams.

As an initial effort, we are investigating datasets that track computer network queries in order to identify patterns that may be associated with attacks and intrusions. Network security is a pressing and, at present, overwhelmingly complex problem in information sciences. Hundreds of alerts are recorded every minute. A small-scale attack may appear in intrusions that occur over a period of months, while a large-scale attack may have dozens of intrusions every second. The nature of the data is multi-faceted, including parameters such as the inquiry's source port and IP address, the targeted port and IP address, the attack signature (generic ping query, buffer overflow, denial of service, etc.), and the type of sensor that reports the attack.

There is some precedent for this work with the Peep Network Auralizer system,[4] which is currently "abandonware" — open source and not being developed further. This system addresses an ongoing problem in sonification, which is that the sound quality of auditory displays tends to be simplistic and thus a less than compelling listening experience. Peep ingeniously solves this by mapping network activity to nature sounds. When a network is functioning normally, there is a pleasant backdrop of waterfalls, streams, wind, and various animal sounds. When something is amiss, the sounds change in character (greater water flow, different types of animal chirps), alerting the operator.

While this is an excellent solution for a monitoring sonification, it is likely limiting for the more highly dimensional information contained in the network alerts datasets. Thus, while we are exploring appropriating elements of Peep, we are also relying on synthesized sounds, which, while sounding artificial, have the benefit of finer degrees of control and nuance. In preliminary models, we have found it easy to distinguish among attack types — from repeated network scans, which sound like sweeping glissandos, to denial of service attacks, which are monotonous pitch repetitions.

Conclusion

From an informatics perspective, sonification represents an exciting frontier of research methodologies. Creating sonifications that are both informative and compelling offers new avenues of digital artistry, and is a fruitful area for multi-media development as combinations of aesthetics and engineering are relied upon to transform dry information into actionable knowledge for decision-making.

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From Sketches to Scenes: How to Develop Games

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The new digital technology images

The easy access and crescent use of computer systems provide the possibilities to domain and acquire knowledge about the production of images, bringing the convergence over other languages and representation techniques.. To produce entertainment contents, creational process is quite the same when compared to traditional medias. Poissant (1997, p. 82) quoting: "Changing attitudes are essential, either spirit or body, to capture when those images are innovative and how are they fundamentally transforming our environment. At first, they permit access under a sensible way to a variety of universes to which the representative forms would stay abstract without the visualization that computers permit. After all, such images using animation can reproduce objects or process motion or the creation and metamorphosis from the image itself". According to Couchot (2003, p. 162), it was not only image morphology that has changed or its generation methods but the way to distribute, transmit, reproduce, store, spread and finally, socialize. By this way, from the very moment of image creation, developed with calculation or language, the representational view and its relationship with real things and with the imaginative and, in widely way with the symbolic economics of society were strongly modified. Images of synthetic results appears when the image source is not found in any image or real object but only in a computational process or when the mathematical description precedes any other information.

Technological development cause a wide source of impacts in perception and artistic creation of images, according to Poissant (1997), Couchot (2003) e Rush (2006, p. 186), "with Technologic Art the expression media itself changes radically when technology change". The mathematical description of an object, in the case of images of synthesis can offer, according to Couchot (2003: 163), another information about itself and environmental relationship. That information happens to be fundamental for game production and, for example, to animate characters, body modeling and motion, like walk or run. Image can have a relation with real models and previous knowledge. In this way, to simulate, for example, a body over water, with the running river and under rain (figure 1), algorithm construction and numeric matrix will certainly obey the optical models for light refraction under water and hydrodynamics process of a river flowing among stones.

Computer games and creational process

Game development market in Brazil, in the year 2005 according to ABRAGAMES (Brazilian Association for Game Development), is commercially unexpressive when compared to other markets like USA, Japan and UK. But Brazilian companies and game can count on a sort of incentive programs by governmnetal agencies. The RPGEDU project, with financial suppor from CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico) and FINEP (Financiadora de Estudos e Projetos), was created to develop an educational entertainment software and the final product is "Taltun: The Land of Knowledge", with its first demonstration version concluded in August, 2007(BRANDÃO et al., 2006). Images utilized in Taltun were produced with a melt of procedures and visual references to create scenes and characters, like the observation of commercial productions like Ragnarok.[1] Specialized literature for game development and RPG, books like Dungeons e dragons,[2] and the movie and books of the trilogy The Lord of Rings,[3] besides comics and manga magazines were used as a source of information.

Other authors like Huitric and Nahas (1997, p. 109 - 110) advocate that digital photography applied on

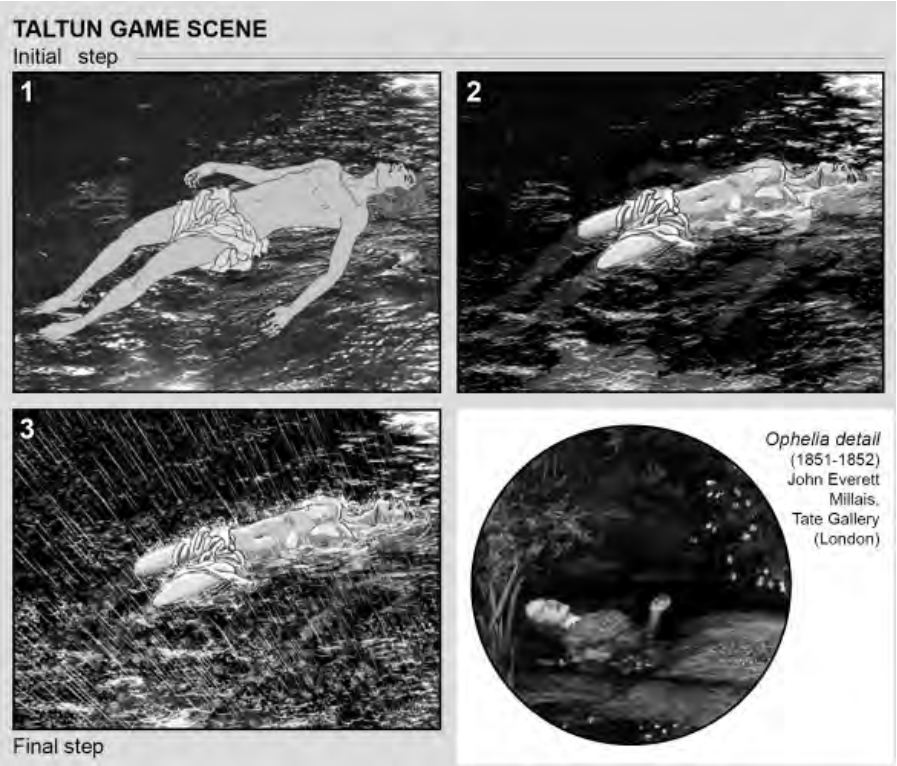

Figure 1: Final scene Taltun compared with Millais' Ophelia

3D images and joined to the copy of any image model (classical 3D characteristics) gives the possibility to the artist to amplify its contribution, or: "It is established that numerical copy has its own degrees of freedom: perspective, color and material modify the copy. On the other hand, besides the study-copy, the personal style of the artist can dispose over a rich pallete the accents in a model, thousand of deformation variables, color exaggerate and any other model manipulation. These new real introduced data can carry to a final version as a fusion between real and imaginative image". The used expression *concept art*, according to Rouse (2001) may be applied to a set of sketches, color tests and 2D or 3D image conclusion; all those elements are part in a final game visual process. The final concept is indeed responsible for related processes to image development and to the realism grade or platform imposed on storyboard development, scenery and characters that are the components of the game (PRADO; STELKO, 2005). In this case, we can use the link between the creation process in Taltun and the image of Ophelia (1851-1852), by John Everett Millais, Tate Gallery (London, UK) and texts about mythological aspects presented by Bachelard (1982), as base for a production for a 2D scenario, modeled afterwards in a 3D solution. The dramaticity of scene suggests the death of the major character in Taltun, compared to Ophelia's (Millais), presented unconscious and with her body underwater. (figure 1)

Facing the possibilities presented by technology, Barbosa Júnior (2002, p. 155) resembles the imaginative nature of the artist, facing art and science in its survey. Couchot (2003, p. 287 - 288) defends the autonomy of art when it is compared with the integration between science and technology, suggested by the insertion of models since the historical origins of the creative and artistic processes. Computer graphics and 3D modeling, according to the author, contribute with the construction of most of the fundamental elements for the visual final process to computer games, as those elements permit the manipulation and application of artistic concepts by using a set of technological tools.

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1 RPG online game, created by Gravity Corporation, South Korea, 2002.

2 RPG of medieval phantasy, Gary Gygax e Dave Arneson, based on J. R. Tolkien. USA, 1974.

3 Phantasy novel by J.R.R. Tolkien, developed from 1937 to 1949.

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Representation, Visualization, Art and Science

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As basic science advances and new technologies become available, artists grapple with their meaning and impact. Some of these are:

- We are in the midst of a movement from virtual to embodied
- We are trying to understand the present using the paradigms of the past
- We live with an increasing mediation of the senses
- With enhanced knowledge of matter at the smallest scale, we can see that some patterns are universal
- Context and intention change our understanding of images
- To whom will technological advances belong?

Virtual to embodied

One issue facing us is that of simulation vs. embodiment. The past decade was centrally involved with creating experiences that resemble reality, or that create a new (virtual) reality. The present decade's concerns have shifted to manipulating reality itself and to understanding the impact that our powerful technologies and scientific advances have on the real world.

Eduardo Kac's fluorescent rabbit "Alba"[1] is a well-known example of commenting on genetic engineering by *engaging* in it rather than representing it. Created in 2000, GFP Bunny "comprises the creation of a green fluorescent rabbit, the public dialogue generated by the project, and the social integration of the rabbit. GFP stands for green fluorescent protein. Transgenic art …is a new art form based on the use of genetic engineering to transfer natural or synthetic genes to an organism, to create unique living beings."

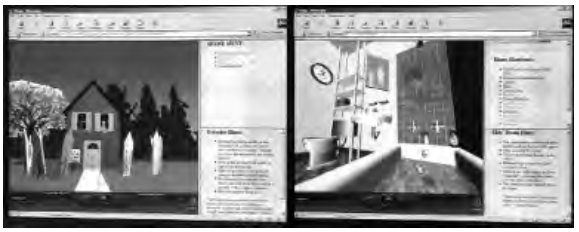
I would compare the work by Kac to The "Judgment" series by Daniel Lee."[2] Although the work wasn't created with genetic manipulation in mind, it has been included in group shows like "Gene(sis)" (organized by the Henry Art Gallery in 1997) along with work that is clearly genomic because of the powerful and disturbing references to the combination of human and animal characteristics.

We might also compare two other works from the realms of embodiment and virtuality.

Present vs past

Nano art may seem virtual because it cannot be directly seen or felt, but it participates in the physical world in a way that the great paradigm of the last decade, virtuality, does not.

Flw,[3] Ken Goldberg's reproduction of Frank Lloyd Wright's architectural masterpiece "Falling Water," demonstrates the absurdity of considering the nanoscale with the paradigms and rules we perceive with our senses. The world not only ceases to be habitable at the nanoscale, the principles of gravity inherent in the cantilevered design are no longer applicable. Goldberg gives a powerful message about the nano-scale: we do not belong here.



A work later in time but participating in the conceptual framework of simulation is "Home"[4] by Drew Browning and Annette Barbier. "Home" was both an on-line, navigable work in VRML[5] that included a neighborhood and house whose interior could be explored, and a work re-created for the CAVE[6] virtual reality environment. The house encompassed several rooms, each of which included links to the work of other artists as well as the voices of fictional characters who had inhabited the house, in addition to animated events triggered by the user in the course of navigation. Although the scale was in one instance miniature (on the computer screen) and in the other life-sized (in the CAVE), in both cases what was simulated was the secret life of each former

resident. Of course the argument could be made that by using viewer-centered perspective, an immersive, multi-screen environment, and stereoscopy, the CAVE version of the work acknowledged and participated in the creation of an embodied experience. Perhaps, in this sense, there are works that sit on the cusp of paradigms.

Mediation of the senses

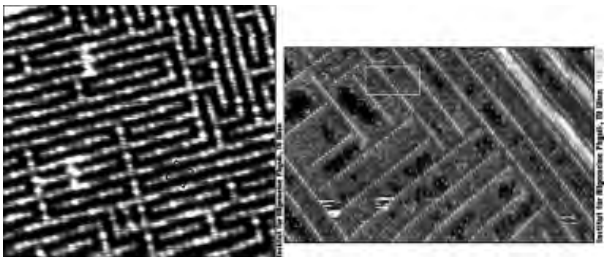
Previously distinct fields of study are converging, as are our senses. For decades we have known that we can no longer understand the world through the direct evidence of our senses, beginning with Einstein's Theory of Relativity. But now we must accept that the distinction between and among our methods of knowing the world may be artificial, and we are entering upon a time of technologically produced synaesthesia in which sight, hearing and touch are interchangeable.

Because reality at the nanoscale is too small to be viewed, it must be sensed using an instrument called the STM (scanning tunneling microscope)[7] which uses capacitance (varying electric current) to gauge the distance between the STM tip and the surface of the substance being sensed.

Another new sensing device developed at Georgia Tech[8] is FIRAT, (Force sensing Integrated Readout and Active Tip). Georgia Tech's website states: "FIRAT works a bit like a cross between a pogo stick and a microphone. Much like a microphone diaphragm picks up sound vibrations, the FIRAT membrane starts taking sensory readings well before it touches the sample." This conflation of touch and sound to deliver information usually thought of as visual is typical of our contemporary way of knowing the world.

Patterns are universal

Technologies that allow us to probe material at the nano scale reveal the organization of matter in a way we've never understood it before and allow us to compare this to other, created structures and patterns. There are striking resemblances between the morphology of



the growth of lead on copper,[9] and a maze puzzle, and between the surface of a platinum/nickel alloy[10] and patterns in fabric.[11]

These images suggest that there are deep structures in the organization of matter which evidence themselves in higher order, human made structures.

Context and intention

The website Nanotechnology Now has an "art gallery" section which contains some stunning images vibrant with color, formally inventive, well composed.[12] The explanations are entirely technical, describing what phenomenon they represent and how they were measured.

Many artists (such as Jean Pierre Hebert, Roman Verostko, John Whitney, Sr.) create images that are strikingly similar to these scientific images, sometimes using algorithmic means.

This raises the question of the distinction between science and art. While there are increasing convergences among scientific fields as well as trans-disciplinarity in art, there are also artists using scientific methods to make art and scientists proposing scientific visualization as art.

Can images be considered art in the absence of context and intention? Is scientific visualization that is beautiful, art? Or perhaps the question should be, rather, why are there such interesting similarities among work coming from such different sources?

Ownership

In Richard Feynman's landmark 1959 address "There's Plenty of Room at the Bottom," he talks about the possibility of placing, through nanotechnological means, the Encyclopedia Brittanica on the head of a pin. His measure of truly small scale, and his metaphor for important activity (ie, archiving information) both relate to the written word.

One of the first breakthroughs in nanoscience to receive widespread press coverage[13] was the image created by Donald Eigler and Erhard Schweizer of IBM's Almaden Laboratory when, using the STM tip, they manipulated thirty-five xenon atoms to spell I-B-M.[14]

The issue of ownership is one that has been central to artists in the 20th century. This disturbing identification with corporate goals inherent in one of the very first nano-images raises the question of whether every advance, every new understanding of matter (living or not) will be privately branded and owned, and whether nothing will be shared collectively by humanity?

Many more questions suggest themselves in relation to the profound developments taking place in our understanding of matter. Our continued involvement in these fundamentally important questions will continue to expand our understanding of ourselves, our field, and our creative and human responsibilities.

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1 http://www.ekac.org/gfpbunny.html

2 http://www.daniellee.com/Judgemnt.htm

3 http://www.ieor.berkeley.edu/~goldberg/flw/

4 http://www.unreal-estates.com/

5 Virtual Reality Modeling Language

6 http://www.evl.uic.edu/core.php?mod=4&type=1&indi=161

7 http://www.iap.tuwien.ac.at/www/surface/STM_Gallery/stm_schematic.html

8 http://www.gatech.edu/news-room/release.php?id=858

9 http://www.iap.tuwien.ac.at/www/surface/STM_Gallery/Pb_on_Cu.html

10 http://www.iap.tuwien.ac.at/www/surface/STM_Gallery/reconstructions.html

11 http://www.answers.com/topic/herringbone?cat=technology

12 http://www.nanotech-now.com/Art_Gallery/Cambridge.htm

13 as quoted by Hayles, N. Katherine. 2004. *Nanoculture: Implications of the New Technoscience*. Intellect Books.

14 http://www.almaden.ibm.com/vis/stm/images/ibm.tif

Intersection of the New Technologies in the Creation of Images (Fine Art) at the End of the XX Century

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Introduction

Technology has always been developed into perfecting the image and this may be seen as our beliefs and wills for understanding the world through its appearance. Technologies have always been present throughout the art history due to their intrinsic connection with image production, therefore we will reflect to what extent digital technology interferes with contemporary artistic procedures.

The work is a combinatory addition of mobile probabilities, where the spectator is placed and transformed, allowing a mutation of attitudes, creating a complex and paradoxical situation, because nobody wants to state a model (in the sense of a truth), but an opening path for the physical and intellectual experience of art.

Framework of the problem

The focus of this paper is the result of the intersection between technology and interactivity, which drives us to perceive the development of the idea of shared production. The work, on being revealed in the aspiration of interactivity enounces a positioning that is linked to the technological means, on space and proceedings issues.

Art is indeed a product of the human freedom, not seen as a need of the instinct face to the intention, but a primordial freedom, without direct intention as an orientation, where one finds out the causes and tries to foresee the consequences.

Images — from technology to desire of interaction

When speaking of images (fine art images), we believe they have always been a dialogue between matters, subject and mediums, chosen by *Man* to communicate their surrounding world — being it of a religious/spiritual nature, a translatable/verifiable nature or even of emotional/abstract nature.[1]

Between the XV and the XIX centuries we witnessed an *esthetization* of the image. Artists started, in a conscious way, considering the ways of production for art works and writing with the intention and aim of spreading their purposes. Artists, as a reflection of society in general, became further aware of the development of science. A strong reason for the end of the classical period and the start of modernity stands essentially in the transformation operated by technology as a result of the Industrial revolution.

Representation supported by devises/apparatus — images were a result of observed situations — as were before us — theatrical in the sense of the physical observer in the physical theatre, which Peter Galassi (1981)[2] talks about, and now (after photography) it has became fictional. This connection is undoubtedly a hint of modernity. Notice that art — value freed from the transcription of the visible — is only possible form the middle of the XIX century onwards, where technology (photography is highly responsible) allows that representation to get way from Men's hands. The change from handcrafted made technology into industrial technology aroused one of the main crises installed in the value of the artistic object as a consequence of the technical processes of reproduction and the consequent growth of visual practice, as stated by Walter Benjamin (1936), verifying a direct relation between "reproducibility" and "loss of aura" of the art work.

The second half of the XX century can be designated as the "civilization of the image", or more precisely according to Font Doménec (1985) "the era of simulation". The world becomes absorbed by images in a desperate act of consumption, resulting in a peculiar form of seeing and understanding it. As Baudrillard

(1992) claims, we live in a world of simulation, in a world where the largest function of the sign is to make reality disappear, and at the same time to mask this disappearance.

There exist an almost fanatic religiosity of this "civilization of the image" in possessing images that are associated excessively with the idea of desire. Knowing the world through their images, we meet the "Real" through their iconic representations. The image takes charge of covering the distances, the absences and the unknowns.

The arrival of the numeric binary (digital) at the image is a technological advent that became a hinge point to understand images nowadays. The artist is equipped from now with a model of a completely new machine, the computer, which no longer seeks, in its primacy, to represent the world but to simulate it. Besides, the image and subject now have the capacity to interact instantly in real time. This immediate situation (now) is quite relevant, because it brings into the artistic field of the image the concept of producing an instantaneous surprise, the decision in the moment — without the responsibilities of the continuous. We no longer care about what is represented but what it represents. We adopt an ideological attitude where the consequences are not true consequences but results.

The numeric advent not only has an effect on the subject, it also affects the image and the object. Object, subject and image are now in the same pool, and none of them have privileged positions. The real world and the virtual world are forced to commute. Object, subject and image derived in relation to each other, pervade and hybrid themselves. According to Flusser (1998), images materialize certain concepts regarding the world, exactly the same concepts that orientated the construction that gave form to them. Therefore, the image — the picture — unlike registering impressions of the physical world automatically transcribes certain scientific theories into images, or to use the words of Vilém Flusser (1998), it "transforms concepts into scenes". The symbolic forms (images) that those machines build are already, somehow, previously enrolled (advanced-written, programmed) in its own conception and in the conception of programs through which they operate. That means the apparatus (computer) condenses in their material and immaterial forms a certain number of potentialities and each technical image produced represents the accomplishment of some of those possibilities.

Computer software comprises formal actions of a group of known procedures, largely a part of the constituent symbolic elementals system. Their articulation rules are inventoried, systematized and simplified, which, as far as the formal actions of known procedures are not related to aesthetic principles, instead of bringing the generic user closer to the act of creativity it puts them in a passive "copy-and-paste" condition. The widespread multiplication of template models around, leads us to an impressive standardization, to a prevalent uniformity of the solutions, to an absolute impersonal way, where we have the impression that everything that is exhibited for the first time we already have seen.

Digital technology does not only alter, in depth, the status of the artistic object, but also the relationship between the producer and the receiver (since the sixties the idea of the public's creative participation is one of the appealing concept/aspects in the artistic universe). The most positive characteristic of the digital revolution appear in the participatory act of constructing the object: instead of the passivity induced by the old-fashioned process of making art objects, the digital material propitiates the action, the physical modification of what is received: a production of possible worlds, an alternative to the existing material world. That is the end of the traditional epistemological position of the subject (we no longer keep the image at a distance). That, more than ever, continues the limitless expansion of the claim of subjectivity.

Conclusion

The production of images has always been conditioned by the presentation space and the medium supported by evolving technologies and techniques in a constant search for an objective search for transcribing reality. According to the symbolic value of the image it has always been considered a substitute of reality directed into the subjective personal construction. Images are a system of beliefs which seek to replace absence. This dynamic system that absorbs and converts the observer transforming the notion of window to the world into a passage in the world. The notion of passage implies a real time action implicated in the interactive system. The observer now has a conscious active role in the space of the image, converting the passive action of contemplation into an immersive space — emphasizing the experience.

Space and time became an influent and decisive condition in the production of the image — committing physical space and observer to be considered as intrinsic elements of the production of the work through the immersion of the observer. Interaction is something that only happens if the observer gets involved (interaction versus convergence). It is in the convergence of actions that the interaction happens, adding the idea that it is in the interactivity that we find the message — where the active quality (the appeal to the intervention of the observer) contrasts with the passive act. By this convergence, digital technology allows a role in the edition of the contents of the images, creating new types of visual structures and assigning subjective narratives — the observer was converted into the user and the passive attitude became consciously active, enhancing the idea of that the work does not inhabit in the imagination of the individual but in the collective. When we try to find through the image participation, we expect a new individual to cooperate, becoming an individual constituent element that qualifies the artistic object in a plural-multi-disciplinary order. By the fact that the interactive spaces provide an immersion, in the quality of active participatory persons, we enter inside the image in real time, becoming simultaneously witnesses and authors of the creative process. The individual creator has been converted into the collective creator that characterizes the dynamism of the interactivity and places the physical and mental space in dialogue with the potential of the work.

By the action of the adjusted participatory interactivity, in the convergence of interest, new territories are developed providing "The Open Work" (Umberto Eco) in the state of work-in-progress. This progress mediated by technological devices allows the spectators engagement physically with the work, totalizing a multi-integration of the senses (kinesthesia). Thus, the technology (over all the digital one) is liberating because it has the ability to transform an end into a beginning. At the end the user completes the work, and by the fact of this kind of work being changeable and not predictable, it never is concluded, but it goes concluding itself for the diversity according to the users expectations given by each individual.

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1 Indeed, since pre-history until today, images, assembled with other mediums, characterized, periods or epochs that are rudely designated for – "Ancient World", "Middle Age", "Renaissance" and "Modern World". Certainly that these designations are divisibles, depending on the type of analyses it brings with it, cfr., Janson, H.W., História da Arte, Fundação Calouste Gulbenkien, Lisboa,1977.

2 Galassi states that photographic vision, its objectivity and informalism of appropriation, was already embedded in painting, and that we can verify , essencialyessentially in portraits and landscapes, that photography took hold of the representation mode – of which already depended communication through images – such as: framing, point of view, themes, etc. Galassi, Peter, Before Photography – painting and the invention of photography, The Museum of Modern Art, New York, 1981.

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duliö Olé! — A Mobile, Swarm-intelligence Based Football Game
Game proposal for the European Football Championship 2008 Austria - Switzerland

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Figure 1: "duliö Olé!" — location based football game

Background

The internet pioneer Howard Rheingold predicts in his book "Smart Mobs - The Next Social Revolution"[1] that collaboration, mobile communication and permanent internet connectivity will mutually amplify. Thereby, the idea of a "virtual" community overlaps with real life. Zorah Mari Bauer's artistic research project "Viennese Stories" focuses on the potential of this "social revolution".

"Viennese Stories"[2] is a collection of mobile location based concepts which exemplify co-creative and user oriented applications. It focuses on social tools which are embedded within existing communicative "ways of live". Handy-cam and micro blogging, buddy functions, telephony, bulletin boards, chat, etc. do not only exist in "virtuality" anymore. They are also usable directly within the experience context of the user. Location based services provide these ways of communication with a real spatial basis. Welcome to the world of games 3.0! Mobile collaborative gaming cultures become available by means of the new parameter "location", adding the proximity of social acting and behaving.

The lecture states that these new formats are based on real life. They are not only creating new potentials for gaming, but also real social possibilities which have to be shaped accordingly. This is exemplified by means of the swarm-based football game "duliö Olé!" which is part of the application oriented research project "Viennese Stories".

Game Concept

During the European Football Championship 2008 and especially for the finals, numerous fans will visit the city of Vienna. Duliö Olé! offers the fans the opportunity to play a common game while lingering through the city. The special thing about Duliö Olé! is that on a virtual playing field with real geographical reference, a virtual match-ball has to be moved into the goal by means of the usage of mobile phones. The teams do not consist of dedicated players. Everyone with a mobile device can join spontaneously, thereby becoming part of (and contributing to) the "swarm-intelligence". At the beginning of the European Championship, the fans vote by means of SMS which national team they want to send to the finals. The two teams with the most votes will compete in the game.

Game Instructions

A central place in the city should be chosen, which will be heavily frequented by the fans. In order to kick along, one has to be on-site within the area (i.e. within the respective mobile network cells) which is overlaid by the virtual playing field. The players send a number

between 1 and 4 (representing four possible directions) by means of an SMS to the provider. Through this, the ball is moved towards the opposing goal. Depending on the number of teammates moving the ball in the same direction, the ball is moved at different rates.

The teammates must act collaboratively to reach their goal. Since location-based services include the closeness of social acting and behaving, the teammates are expected to agree on their behavior to enhance their scoring chances.The playing field, the current position of the ball and the score are displayed on large video screens on-site. Additionally the course of the game is sent continuously to the mobile phones of the participants and interested visitors (by means of WAP-Push). The game can also be followed on an associated internet site, which also offers the opportunity to make a bet.

Details

Figure 2: "duliö Olé!" - details

By means of a statistical overview, the interested player receives background information about the running game, e.g. the distance to the goal or the current number of opposite player (in order to call for reinforcement).

The visitors can comment on the current situation of the game by means of SMS or MMS ("micro blogging"). Based on the idea of football player picture collections, the team members can post their personal profile (nick name, contact, favorite music, hobbies, portrait picture) to a player gallery online, thereby staying in touch with each other even after the games.

The game can be scheduled for the duration of the championship. It is also possible to plan for multiple games with a shorter duration. The members of the winning team are participating in a lottery (car, plasma TV or a meeting with football stars). The game provider can identify the players by means of the preceding SMS communication.

Marketing

The title duliö Olé! suggests a combination of yodel and cheer sounds. Yodeling resembles the two alpine countries Austria and Switzerland, where it is an inherent part of the image building. The marketing concept communicates this folkloristic quotation in a trendy way.

"duliö Olé! Olé! holdio diriaho…", a significant word order containing the title of the game, can be extended into a retro championship hit. It would also resemble an appropriate ring-tone for mobile phones. Because of its onomatopoeic and tongue twister impression, the title duliö Olé! has a high recognition value, also for the non-German speaking audience (especially if it is also communicated visually).

An attractive pricing policy regarding the mobile services being used (SMS, MMS) is a prerequisite for the fans coming from different countries to participate. Social commitment through participation could be an additional motivator: a certain percentage of the price paid for each SMS is used for social sponsorship (e.g. for the promotion of young athletes).

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1 Rheingold, Howard. 2002. *Smart Mobs. The Next Social Revolution*. Cambridge: Perseus Publishing.

2 Bauer, Zorah Mari. 2008. *duliö Olé! - A mobile, swarm-intelligence based football game. Game proposal for the European Football Championship 2008 Austria - Switzerland.* www.zorah-mari-bauer.de

The Many Faces of Interactive Urban Maps

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New Urban Maps

The times of typing a password before the jarring modem connects to the internet were the times when the metaphor of cyberspace was to spread most briskly.[1] It felt like crossing a border after the passport check and entering a new space of text-only communication with people connecting from all over the world. Today's spread of mobile communication and ubiquitous computing denounce the cyberpunk theories of the nineties that proclaimed the abrogation of physical space and the human body. Digital technologies and sensors inhabit urban space, parts of the digital documents and data along with virtual communities migrate back into geographical space.[2] The internet merges with the geographical space instead of overriding it. This trend is characterized rather by the urban GPS chasing game "Can You See Me Now?"[3] than Second Life.

As a consequence the classical cartographic paradigm hardly applies to urban space. The street map is not a fixed representation of the terrain anymore.[4] While using GPS and mobile internet in the city we navigate through physical and virtual space, permanently redrawing the map. Spatial annotation systems' maps can be referred to as new paradigmatic examples of urban mapping. Spatial annotation is mainly the attachment of any digital information, comment or message to a chosen point of geographical space. Tagging with stickers or any other physical tags[5] is referred to as spatial annotation but the interactive maps combined with localization technologies become more and more dominant. Such maps: *Bliin*, *denCity*, *Plazes*, and *Urban Tapestries*.[6] Depending which map we use, messages can either be attached to any point on the map or to the users actual location (which is generally the case when users are commenting on the actual situation). Further features might include manual or automatic localization, setting the group of people authorized to see the annotation, or the time interval for which the comment should be published.

Figure 1: screenshot of Bliin map

Locative Messages

Spatial annotation is often associated with 'locative media', coined lately by media artists exploring the intersection between the internet and the geographical space.[7] The locative media project *Loca* tracked down urban passengers without their knowledge and sent intimate messages to them according to their trajectories in urban space. For example: "You walked past a flower shop and spent 30 minutes in the park, are you in love?". Loca not only addressed the issues of surveillance and data-protection but also the issue of media that deals with the city as context of our actions and communication. *Loca* exemplifies the question raised not only by locative media, but also by developers of location-based services: What kind of knowledge and information depends the most on the context of urban space? How can we measure locativity?

Location-based services often support navigation by indicating the location of the next restaurante, cash machine, friend or doctor. Yet indicating the location of a single person, institution or facility is not the utmost image-specific task. The use of mobile phones reprogrammed urban life even before the arrival of interactive urban maps by enabling people to communicate in real time where they are or where they are heading to. As a result not only our time management has changed but also the nature of time itself.[8]

Besides navigation, interactive urban maps help us interpret locative messages. Locative messages may be understood as information that comments on a specific location or situation in the city or its relevancy pertains to a specific location. It can also be understood as a message for which concrete location provides the context that supports its interpretation, such as 'Get out at the next stop!' or 'Call me when you get there!'. Usually these messages cover practical aspects of urban life. But how can we assess the grade of locativity of a specific kind of information?

What Maps Can Do

The question above encompasses spatial relations that are represented with images better than through text. The real strengths of interactive urban maps as visual tools is illustrated by thematic maps: the long list of data collected about weather conditions over years will never reveal the belts that become salient when visualized on a climate map. Similar to this is the data about urban life — such as density of mobile use, WiFi coverage, messages attached to a place — which become tangible and apparent on the map.[9] These maps are not drawn by a single cartographer but by a community. Principles that are analogous to the ones underlying the Blogosphere determine the appearance, spread, mutation, disappearance of messages. Dots merge to lines and lines draw shapes on the map revealing new connections and correlations. Hence the interactive map does not only visualize statistical data (which Jane Jacobs has warned us from) about the movements and communication of individuals and existing communities, but the pattern drawn by a number of messages reveal the emergence of new topics, communities and initiatives. For this image-specific task the maps cannot be substituted for.

Zooming allows us to change from street-level to birds eye view providing an overview over community scale activities. This implies a real time feedback between the individual and the community scale, rewriting the rules of urban life and communication just as mobile telephony did by allowing a real time feedback between individuals.

Finally, dynamics of the pattern emerging on interactive urban maps allow us to deduce which topics and messages are location-sensitive. Messages that have the same relevancy at every location in the city will most probably draw random pattern on the map. As opposed to this, messages that are embedded in the ever-changing context of urban life, will exhibit a dynamics that reflects the self-organizing nature of the city. The detection and identification of pattern on the map that emerge out of a seemingly random background noise is an image-specific task similar to the use of scientific visualizations fostering scientific work and scientific discoveries. A famous example is the discovery of the double helix structure of the DNA by Watson and Crick, who used besides their knowledge in chemistry and their self made models also the abstruse images produced by X-ray crystallography.

Interactive urban maps will enfold their full power as soon as they will be used by a sufficient number of people, yet this paper already revealed some of the facets of urban life that are most likely to be effected by maps: the support navigation; display urban context fostering the interpretation of locative messages; rewrite rules of urban self-organization by providing feedback between the individual and the community scale; and finally, they become visual instruments that contribute to the understanding of the nature of locativity.

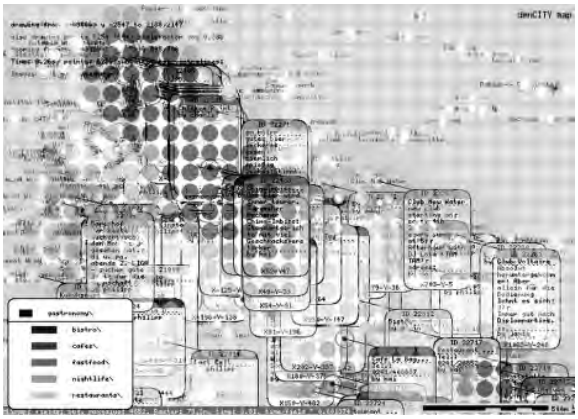

Figure 2: screenshot from denCity map (streets hidden)

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1 Alex Soojung-Kim PANG. 2007. "The End of Cyberspace and the Emerging Telecommunications Convergence." In presentation at the conference T*owards a Philosophy of Telecommunications Convergence,* Sept. 27–29, Budapest: Hungarian Academy of Sciences.

2 Adriana de Souza e Silva. 2008. "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces." In *The cybercultures reader 2.0*, edited by D. Bell and B. Kennedy. London, New York: Routledge, pp. 757-772.

3 http://www.blasttheory.co.uk/bt/work_cysmn.html

4 http://personalpages.manchester.ac.uk/staff/m.dodge/cybergeography/codespace/

5 cf. http://www.elasticspace.com/2004/06/spatial-annotation

6 http://bliin.com/; http://dencity.konzeptrezept.de/; http://plazes.com/; http://urbantapestries.net/

7 Leonardo Electronic Almanac Locative Media Issue, URL: http://leoalmanac.org/journal/Vol_14/lea_v14_n03-04/intro.asp

8 Townsend, Anthony. 2000. "Life in the real-time city: mobile telephones and urban metabolism". In *Journal of Urban Technology* (7)2, pp. 85-104.; Nyíri Kristóf, „Time and Mobile Order", URL: http://www.hunfi.hu/nyiri/TMO.pdf 2007

9 MIT Sensable City project; URL: http://senseable.mit.edu/

No Place Like Now, Now Like No Place

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My paper, titled, *No place like now, now like no place* presents a number of themes related to my PhD research and ongoing creative research into online identity and community. There are several works I will refer to in this paper:

- A screen projection work titled *Swipezone* presented at CUBE37 in Frankston in 2006;
- a web based work titled *swipe: airports, borders and fences*, published in 2007; and
- *Facebook fictions*, a new work that is currently in development.

These works explore in different ways how alienation affects perceptions of identity. The intention is to present a range of issues related to notions of loss of identity and displacement. There are many cases where the condition of social displacement may occur in terms of social relations. For instance, a change of residence and community can trigger feelings of isolation and lack of security in a previously affirmed sense of self.

Swipe — airports, borders and fences and Swipezone: CUBE 37

The aim of both these projects was to present a range of issues related to notions of loss of identity and displacement. The challenge is how does one articulate such a position without being merely descriptive? Although the images, text and video are largely autobiographical, the themes are directed at experiences that are universally human in nature. Are we all capable of feeling isolated? What are the catalysts for alienation? These are some of the questions at stake in this work.

A quote from Julia Kristeva in *Powers of Horror: An Essay on Abjection about the role of the exile* resonates for these projects:

> AN EXILE WHO ASKS "WHERE?"
>
> The one by whom the abject exists is thus a deject who places (himself), separates (himself), situates (himself), and therefore strays instead of getting his bearings, desiring, belonging, or refusing. Situationist in a sense, and not without laughter — since laughing is a way of placing or displacing abjection. Necessarily dichotomous, somewhat Manichaean, he divides,, excludes, and without, properly speaking, wishing to know his abjections is not at all unaware of them. Often, moreover, he includes himself among them, thus casting within himself the scalpel that carries out his separations.
> Instead of sounding himself as to his "being," he does so concerning his place: "Where am I?" instead of "Who am I?" For the space that engrosses the deject, the excluded, is never one, nor homogeneous, nor totalizable, but essentially divisible, foldable, and catastrophic. A deviser of territories, languages, works, the deject never stops demarcating his universe whose fluid confines — for they are constituted of a non-object, the abject — constantly question his solidity and impel him to start afresh. A tireless builder, the deject is, in short, a stray. He is on a journey, during the night, the end of which keeps receding. He has a sense of the danger, of the loss that the pseudo-object attracting him represents for him, but he cannot help taking the risk at the very moment he sets himself apart. And the more he strays, the more he is saved.[1]

This text and especially this quote articulates the challenge inherent in my research project. Kristeva succinctly articulates what is the antithesis of identity. Notions of identity are formulated around the individual locating proxy objects as a means of naming self and experience. In this analysis of the exile, we are confronted with the reality of or desire for a non-object and the implications of searching for something that is removed from view and knowledge.

What is the inherent difference between 'where am I?' and 'who am I?' How much importance is placed upon a sense of place when formulating a concept of identity? Perhaps the notion of 'who am I?' becomes more significant once there is a shift from an individual's sense of home.

Swipezone CUBE37
Installation view from street

There are many relevant examples of individuals or groups who are socially excluded.

There are a range of medical subjects that have been considered outcasts — lepers, people with the plaque, aids suffers, to name a few. People suffering for mental illness have long been incarcerated and treated as sub-humans, as well as people with physical and intellectual disabilities. Of course, race and religion are other historical (and contemporary) examples where the 'outcast' identity is defined. Within the context of a contemporary 'western society', it is undoubtedly the Muslim identity that is considered abject.

Alienation is also a product of capitalism, according to Karl Marx. It arises because of the distance created between the worker and the product of their labour — as the worker has no claim on the object, even though it was made or created by them.

Swipe:airports, borders, fences
Front door screen shot of www.swipe.name

Keywords

Words are potentially more powerful than images, they have the capacity to evoke history and mythology and have the propensity to evoke strong emotions.

Swipe — airports, borders and fences[2] relies on a series of keywords that guide the web site user, with the intention of creating a sense of empathy and co-identification using the word. The keywords focus on feelings of displacement, of alienation and of loss of identity.[3]

These words and pages are also presented in a French Language version as an attempt to expand the readership of this work. The decision to provide a multilingual aspect to the website was motivated by a desire to not be trapped in an Anglo-centric world-view. Whilst I cannot escape the fact my background is European and I am identified as an 'Anglo' because of my Caucasian features and predominately English language skills, I would like to engage people outside of this matrix as readers and contributors to the work.

Facebook fictions

In *Facebook fictions*, I have created a fictitious identity in Facebook with the purpose of determining the capacity of this character to engage in the social networking environment provided by Facebook. My alter ego — Siana Milev, takes the name of my second life identity and she shares the birthplace of one of my favorite writers Anais Nin.

Siana also has a blog titled *fauxonomy*, which is a play on the term 'folksonomy' used to described online social networking and tagging. 'Faux' in French means 'not correct' or 'not right'. Seeing that this project is in the initial stages, it will be interesting to see what evolves over time.

I have also created a group in Facebook with the name of *Facebook fictions*. So far I have over 80 members and have started developing a blog and mindmap as a space for the members to contribute their own work about online social networking, identity and authenticity.[4]

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1 http://social.chass.ncsu.edu/wyrick/debclass/krist.htm (accessed 25 May 2003)

2 http://www.swipe.name

3 exile, void, beginning, mistaken, crossed, translate, dream, lost, imprisonment, separate, inferior, imagine, access, inherit, denied, loss, time, metro, waiting, family, normal, native tongue, passport, fence, past, border, airport, transit, boat, hospital, alone

4 http://facebookfictions.blogspot.com/

Hyper-Augmented Reality:
Looking at AR Through Some Old Postmodern Goggles

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Introduction

Augmented reality (AR) refers to a family of technologies that allows us to see images of the real world and computer generated images in the same field of view in such a way that they appear to be part of the same reality. It has existed as a field of research for more than a decade but most theoretical writings confine themselves to technological problems and evaluation of their solutions, or to attempts to taxonomise the solutions in some way. The actual content, and issues surrounding its design, is mostly ignored. This could be for a number of reasons:

Firstly, augmented reality, and the technology surrounding it, is still in its infancy and taking its first shaky steps out of the laboratory into the consumer domain. This makes it hard to see AR as a medium since the technology itself still barely works, and has few established standards and high level tools. It will be some time then, before designers can gain full access to it, and even longer before an audience can begin to engage with it.

Secondly, the very idea of *content* implies the existence of a *container* and that a communications technology should aspire to total transparency, to effectively disappear from the awareness of the user. In doing so, we ignore the effects that medium and message can have on each other (or that they may be the same thing). We also implicitly deny the possibility that a medium can hold and convey meanings in, and of itself. The idea that one can make a technology, completely free of the norms and values of those who conceived of, built and financed it, is the kind of belief that we associate with a Modernist world view.

By Modernist, I refer to an early twentieth century world-view built around scientific progress. Modernism is characterised by belief in the human power to improve the world through science and technology. It is driven by an idea of the individual creating new and original ideas that obsolesce pre-existing ideas — an abandonment of tradition (Wikipedia, 2008a). In technology, it is understandably the default approach to theory and reinforces its position with experimental evidence upon which are built frameworks, taxonomies and hierarchies. Because this has been highly effective in driving the continued development of technologies, it is naturally the foremost discourse in technological circles. Unfortunately, the prominence of the Modernist world-view can deafen us to other voices that might influence how we think about how technology might contribute to human experience.

Video see-through augmented reality is of particular interest to me. It typically uses a head-mounted display (HMD) with a camera mounted on it. Special markers are attached to objects in the real world so that, using the attached camera, the computer can read them and determine the identity, position and orientation of each marker (Kato & Billinghurst, 1999). The computer then uses this information to place computer-generated objects and imagery so that they appear to follow or be part of the real-world objects. When viewed on the HMD screen, we see CG elements inserted into our view of the real world. It is worth noting that the real-world image is actually not real, but is instead a video image and is therefore open to the same manipulations that can be applied to other video images. Also, objects can have both real and computer-generated aspects. The real part can be picked up and manipulated by the participant whereas the CG part can change and respond to data in ways that a real object can not. This tenuous portrayal of reality and the ambiguous relationship between signs, signifiers, and the things or ideas to which they might refer, reminds me of issues raised by writers associated with the postmodern movement.

Postmodernism

Postmodernism is a term used to describe a variety of schools of thought that arose in the mid twentieth century as a response to world war two and a growing disillusionment with the tenets of modernism (Wikipedia, 2008b). Postmodernism is characterised by diversity,

contradiction, fragmentation, collapse of hierarchies, erosion of boundaries, interrelations and complexity to the extreme.

Jean Baudrillard's writing actively undermines the order of modernism by digging at its foundations. He claims that signs have developed a life of their own and that signifiers have broken free of that which they might have originally signified. This has led us into a situation where simulation takes over various social processes and our sense of reality itself (Jean Baudrillard, 2001). Beginning with the signs of status that fix our rank in society, counterfeits appear being signs that mask or pervert reality. Before long, mass reproduction creates millions of copies that mask the absence of an original. Finally signs begin to bear no relation to any kind of original. We make maps for which there was never any territory (J. Baudrillard, 1988). In the absence of territory, we inhabit the maps. The maps go beyond territory in detail and become *hyperreality* — a real that is more real than real.

In video see-through augmented reality, we have a camera located at the center of the universe. It is fixed in position so that the universe revolves around it. The computer program that looks out through the camera ignores most of what it sees except for special signs in the form of special fiducial markers. As Milgram (Milgram & Kishino, 1994) points out, the extent of the system's world knowledge is an important factor in merging the real and the virtual. In this case, the system's world knowledge is complete, but only in terms of a universe bounded by the camera's frustum and populated only by floating markers whose positions and rotations are moments of significance in an otherwise empty void. These can be seen as floating signifiers that are finally linked only to other signifiers. Like Paul Virilio's *vision machine* (Virilio, 1994), a shared seeing takes place where the human and machine are both trying to interpret the same signs in the world. The computer then presents an altered version of the world surrounding the markers. The human must once again interpret the computer's interpretation and, by responding, changes the situation again for reinterpretation by the computer. Here, the technology is as much a technology of seeing as it is one of display. Because the computer is modeling the world and potentially making predictions based on its models, we might be 'witnessing' events that have not yet happened except in the accelerated sight of the vision machine. Virilio, often described as *hypermodern*, talks about machine mediated vision in terms of big and small optics. Small optics is our normal level of magnification and use of optics. Big optics allows us to collapse physical space by seeing events at great distances at the moment that they happen. This confers advantages of elite status to the privileged few granted this vision, further disadvantaging what Armitage (Armitage, 2000) calls the '(s)lower classes'.

Conclusions

Having barely scratched the surface of postmodernism and how it might relate to augmented reality, there is still much to say and many other writers whose work could inform augmented reality as a medium. Admittedly it is putting the cart before the horse to try to theorise about a medium for which there exists almost no creative practice. However, I hope to extend some of the ideas put forward in this paper in the form of a longer paper and hopefully an augmented reality art work about augmented reality. I see such a text as helping 'prime the pump' for those who might wish to make augmented reality, not as a display technology, but as an artistic medium.

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‘Casting From Forest Lawn Cemetery’: Re-Animating Dead Screen Stars

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In Villiers de l’Isle-Adam’s late nineteenth century novel, *Tomorrow’s Eve*, a fictionalized Thomas Edison unveils an astonishing technology: a precursor to cinema, which projects the singing and dancing image of a woman who has been dead for several years. “Her death mattered very little; I can make her come into our presence as if nothing had ever happened to her,” Edison declares.[1] This literary moment is emblematic of how the advent of audio and visual recording media in the late nineteenth century were thought to constitute a triumph over death.

In the twenty-first century, the recorded images and sounds of the singing and performing dead are now unremarkable: my local supermarket sells Marilyn Monroe classic movies on DVD, next to the dishwasher detergent and air-freshener. During the 1990s, however, with the rise of what Lev Manovich has called a computer-driven “remix culture,”[2] footage of dead stars and celebrities such as Fred Astaire, Lucille Ball, and John Wayne began to be repurposed via editing or compositing for advertising and guest appearances in films and TV shows. It is now also possible to bestow performance footage or digital likenesses of celebrity personas with new gestures and expressions that they themselves did not generate before the camera while alive. I call such images here, “re-animations.”

For scholars, the main import of such images has been for intellectual property law.[3] However, more general speculation and commentary in the English-speaking entertainment and technology press, blogs, and viewer responses on Youtube, suggest ambivalence and concerns that go beyond the legal.

For instance, in January 2007, American popcorn king Orville Redenbacher, who died in 1995, was re-animated to appear in a ten second television spot.[4] A clay model was made of his head from video references, scanned and animated, composited or grafted onto footage of an actor’s body, while an impersonator provided his voice. The public face of his own brand, he was known for his popcorn advertisement in the 1970s and 80s. This new advertisement, developed by Digital Domain for the agency Crispin, Porter & Bogusky, was a homage featuring Redenbacher ostentatiously listening to an MP3 player and microwaving popcorn while live action workers in a kitchen gaped at him, apparently startled that he had returned from the grave. The result was widely assessed as “terrifying,” “gruesome” and “creepy”: the head bobbles strangely on the body, the eyes are dulled and unseeing behind his spectacles, and the mouth movements are slightly out of synch.

Examining both the re-animation and the nature of the responses to it, it seems clear that three main problems led to its non-acceptance. The aesthetics of the animation were aiming at live action realism but missed, entering that uncertain space between life and death, the Uncanny. The intended audience for the advertisement knows he is dead. He is sharing the same space in the frame as the living but it is not as if he is living again — he is presented as a miraculous resurrection. Together, these three factors render Redenbacher abject, the living dead among the living, even though his image in death is being used as it was in life.

With dead actors’ and screen stars’ images, however, problems of aesthetics, viewer knowledge and ontology tend to be compounded by additional ethical concerns about the symbolic treatment of the dead, as well as popular understandings of the labour of screen acting and performance. Advertising campaigns of the 1990s that repurposed screen performances of Fred Astaire and John Wayne to sell vacuum cleaners and beer, respectively, were criticized in the American media for exploiting the dead and cheapening the artistry on which their careers and the devotion of their audiences were built.[5]

The producers of *The Sopranos* have also drawn fire for using digital compositing to give actress Nancy Marchand a final scene for her character, Livia, after Marchand died of cancer between shooting season 3 and 4 of the television series. Old footage of the actress’s talking head was grafted onto a body double to create

a final conversation with Livia's son Tony, played by James Gandolfini. Marchand's head spoke lines edited from previous performances, giving a bizarre Frankensteinian effect of a figure cobbled together from body parts. Moreover, the use of old lines taken out of dramatic context made Marchand sound "like one of those dolls that repeats one of several alternating phrases each time you pull the cord in her back."[6] Even apart from the troubling aesthetics and the poor execution, the process itself was seen as devaluing the late actress's agency and intentionality: two things which are often centred in screen-acting discourse, and figure strongly in journalistic writing about cinema and interviews with actors.[7]

Contrast this, then with the re-animation of Marlon Brando, two years after his death to reprise his role as Superman's father, Jor-El, in Bryan Singer's *Superman Returns* (2006). Brando originally appeared in this role in the 1978 *Superman*. In that film, Jor El dies when his planet of Krypton is destroyed, but not before he places his infant son into a spacecraft headed for Earth, along with some recordings of himself embedded in crystals. For the remainder of the film, and for his part in *Superman Returns* then, Marlon Brando appears as a recording of a being who is already dead, a figure that does not share the same time and space as the living. While in the 1978 film Brando's head appeared solarised and superimposed over the ice cave set, in the 2006 film, the image of his head appears integrated into the world of the film. It is refracted and reflected through layers of ice that slightly distort it, serving to mask any aesthetic problems. Aesthetically and ontologically, then, the re-animation succeeds.

Moreover, the process of Brando's re-animation was used as one of the primary promotional features for the film in a short clip created by FX house Rhythm and Hues.[8] It demonstrates how the re-animation was built from original footage of Brando as Jor El from 1978; how his mouth was animated to match phonemes spoken on audio-tape, how the 2-D image was wrapped around a 3-D model; and how skin textures and lighting were adjusted to sell the re-animation. The visual rhetoric of the clip firmly positions Brando as image-property rather than actor, as the image moves back and forth between animate and inanimate states. We become aware, somewhat disconcertingly, that the man who filled out the image is gone.

The relationship between Brando-actor, and Brando-image-property is also discussed by the director Bryan Singer in an interview. He acknowledges the power and nostalgia of Brando's image, hoping it transfers semiotic weight from Richard Donner's 1978 *Superman* to his own film. In deference to the late actor's artistic status, he speaks of him as the "great actor" who shares screen space in this film with "an Oscar winner of another generation," Kevin Spacey. But Singer also reminds us that Brando sold his image for use in the *The Godfather* computer game: evoking a person who was artistically lauded but who also exploited the commercial value of his image and was not precious about its use.[9]

Taken together, is this film and its promotional extratexts early signs of a negotiation of the aesthetic, ontological, ethical and definitional problems with the cultural reception of digital re-animations of the dead? New image technologies or techniques that first appear disturbing, may go through a process of shifts, negotiations and reframings to become domesticated. Media producers who want to solicit acceptance of their re-animations will have to think beyond legal frameworks, to an awareness of the sensibilities of audiences, and the aesthetic, ontological and discursive dimensions of such images.

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Embodied Emergence:
Distributed Computing Manipulatives

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Abstract

This paper discusses how a system comprised of simple tangible blocks can enable playful and creative experimentation with the concept of emergent behavior.

Introduction

Distributed systems and the emergent properties that can arise out of simple localized interactions have fascinated scientists and artists alike for the last century. They challenge the notions of control and creativity, producing outcomes that can be beautiful, engaging and surprising at the same time.

Emergence has been central to fields such as artificial life and its artistic derivatives. It implies something novel and unanticipated, and as such can be thought of as the reward which draws the artist to explore this bottom-up approach to creation.[1] Furthermore, systems based on emergence carry the promise to allow the creation of complex behaviour from simple elements. The notion of using emergence as a strategy to manage this complexity is very attractive in an era where technology is becoming ever more complicated.

Related Work

The last few decades have given rise to a rich body of software-based works in fields like artificial life and generative art, such as Brian Knepp's Healing Series[2] and the Emergence Engine.[3] Comparatively, their physically embodied counterparts are still in their infancy, in part due to the complexity of building and deploying such systems. Still, a number of artists have been exploring this conceptual space: for example, see Ken Rinaldo's Autotelematic Spider Bots,[4] Adam Brown and Andrew Fagg's Bions[5] or Ping Genius Loci by Aether Architecture.[6]

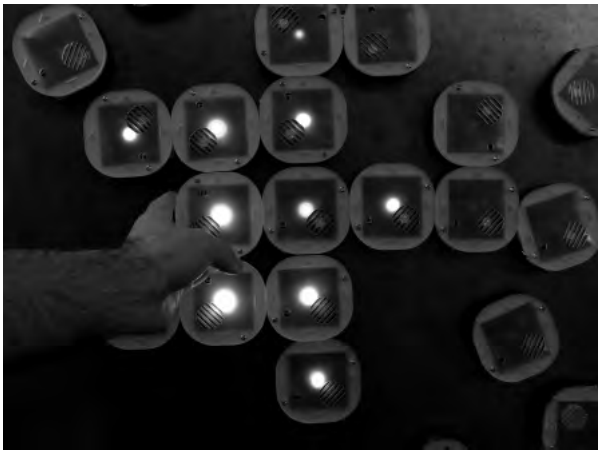
Educational tools also come to mind when discussing emergence, going back to software environments like StarLogo[7] to more recent, tangible interfaces such as Leah Buckley's Boda Blocks[8] or Vincent Leclerc's Senspectra.[9]

Motivation

The aforementioned educational platforms shine with their simplicity and intuitiveness: they can be manipulated by the user to enable a deeper understanding of the emergence mechanisms and therefore encourage experimentation. On the other hand, the artists' project designs push the limit of what can be accomplished using software simulations. However, the user's involvement is often limited to an observation role, with very little direct manipulation.

This paper attempts to address this shortcoming. We present a platform at the intersection of art and education, called *Sound Mites*, which enables a playful exploration of emergent phenomena through what we refer to as distributed computing manipulatives.

Sound Mites



Sound Mites are tangible blocks that communicate with one another in an asynchronous fashion. Each block generates light and sound according to the state of its immediate neighbors and a simple set of rules. They sense touch through a thin metal rim and can modify their state to reflect the interventions of users. The blocks are made out of acrylic and wood, and adhere to flat metallic surfaces by the way of built-in magnets on the bottom.

Each block is fully independent. Users can reconfigure the topology of the system in real-time by rearranging the blocks, creating an ever-changing sound texture with unique qualities that are revealed through a multitude of sound sources physically distributed in space.

Design Considerations

We set out to define a set of principles which have guided and informed the design process of the work. In this process, we identified some constituents of a playful, intuitive and engaging system exploring the notion of emergent behaviour:

Tangibility

The blocks embody the principles of distributed computing in a tangible way. In terms of intuitiveness and playfulness, tangibility offers advantages over software implementations because of affordances derived from an object's shape, material and texture. It enables a more direct manipulation of the system as well. For instance, it is easy to quickly make adjustments to the topology using both hands. Finally, projecting a simulation unto the physical objects also has the benefit of allowing multiple people to interact at the same time around a set of blocks.

Interactivity

In combination with their tangible nature, interactive blocks enable coincidental input and output, where feedback occurs on the interface itself, thus reducing the level of indirection. Interaction also fosters exploration. By allowing the blocks to sense user input, we have created a system which is responsive and gratifying to interact with. Action/reaction mechanisms also provide some grounding point for more abstract concepts, for example by allowing the user to control the placement and amount of "seeds" which are driving a distributed algorithm simulation.

Autonomy

In order to remain true to the spirit of decentralized control, the blocks were implemented in a fully distributed and autonomous fashion. This means that each block functions independently and does not rely on the presence of any particular neighbour block to perform its processing. To strengthen the user's perception of their autonomy, blocks communicate wirelessly via infrared. The use of physical connections would suggest a hidden clock or a centralized process running the show. We believe that making the blocks truly autonomous has a more powerful impact on the user's discovery and understanding of their decentralized behaviour.

Simplicity

There was an effort to make sure the blocks remained as simple as possible. One of the most appealing ideas about emergence is the notion that a simple model of local interactions can generate complex, higher-level behaviour. The blocks should reflect this in their architecture as well as in the complexity of the computation that they can carry out.

Simplicity also means that the blocks can be produced at a low cost. A high number of blocks are needed to make a tangible distributed simulation interesting; thus it is impractical if the cost of each individual block becomes too high, particularly in an independent art context.

Future Work

We are still in the process of understanding these types of networks and what possibilities they might have to offer. Sound Mites are a small step in that direction. Looking ahead, there is a need for platforms targeted at artists that would facilitate these kinds of aesthetic experimentation with emergence and distributed systems.

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Visualising the Locative Experience

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With the accessibility of GPS (Geographical Positioning System) enabled technology, creative practitioners and technologists are rapidly increasing their use of GPS devices to capture locational data as representations of time and space. The methods of visually transforming locational data are diverse and represent a rapidly emerging field of visual practice that enriches our understanding of human interaction with a given location.

Visualisation of locational data consists of two main types of visual content — firstly, the GPS data and secondly, contextual data collected along the journey (photographs, personal notes, sound, etc). The former is a literal transcript — a static, one-dimensional representation rendered into a simple graphic form such as XY and Z coordinates and/or a point-to-point mapping which traces the journey. The latter, being interpretive content, is representative of the location and the traveller and by extension, the social/cultural aspects of the community or environment. Our survey of on-line GPS visualisations revealed that a majority of practitioners were exploring visualisation of GPS data alone with few augmenting this with contextual data.

To gain greater understanding of the field the authors considered the visualisation of GPS data as explored from an information design perspective[1] and focused on how space and time could be given dimension and meaning through its visual representation. From this approach, a contextual classification system was developed that identified the use of line, colour and symbol as the common codification techniques used by creative practitioners working with locational data. This classification helps us to assess the convergence of the codification as visualisation systems (see illustration 1) and in doing so, to develop an application tool which may used by practitioners to visualise GPS and contextual data in a manner that achieves an immersive embodied experience.

Codification of Locational Data

In developing our codification system the work of Drew Hemment[2] informed our understanding of the emerging practices of locative art. He proposed that artworks in the field fell into three main categories including mapping; geo-annotation; and, ambulant. In creating these categories Hemment provides the basis for critical evaluation of the field including identification of those categories that have yet to be explored such as the practice of mining quantitative information in relation to interactions with physical spaces (i.e. biological data).[3]

We sought to build upon Hemment's work by performing analysis of the current techniques used to visualize time and space in the context of mapping and geo-annotation. Our study focused on locative media projects that visualised GPS data as its main form of communication and we found the most common techniques used were the codification of line, colour and symbols to represent time, space and experiences (see illustration 1).

a. Line
   For the majority of GPS visualisations, a single line is employed to trace the journey from a bird's eye view along the "X" and "Y" axis. The direction and angle of this single line trace can be further coded to enable greater interpretation of the data. For example, in *Flycab*,[4] a third dimension is used to represent repeated journeys over the same geographic location.

b. Colour

There are currently two prominent methods of using colour — firstly, to distinguish elements (i.e. differentiate the trace from the background or separate overlapping traces of multiple journeys) and secondly, to visualise quantitative data. The second method describes the practice of codifying colour in ways to reveal the imperceptible relationships between geographical locations and its inhabitants. This technique assigns quantitative data to the colour or opacity values to assist viewers to perceive changing patterns as demonstrated in *GPS-quisse*,[5] *Graz in Real Time* and *AIR*.[6]

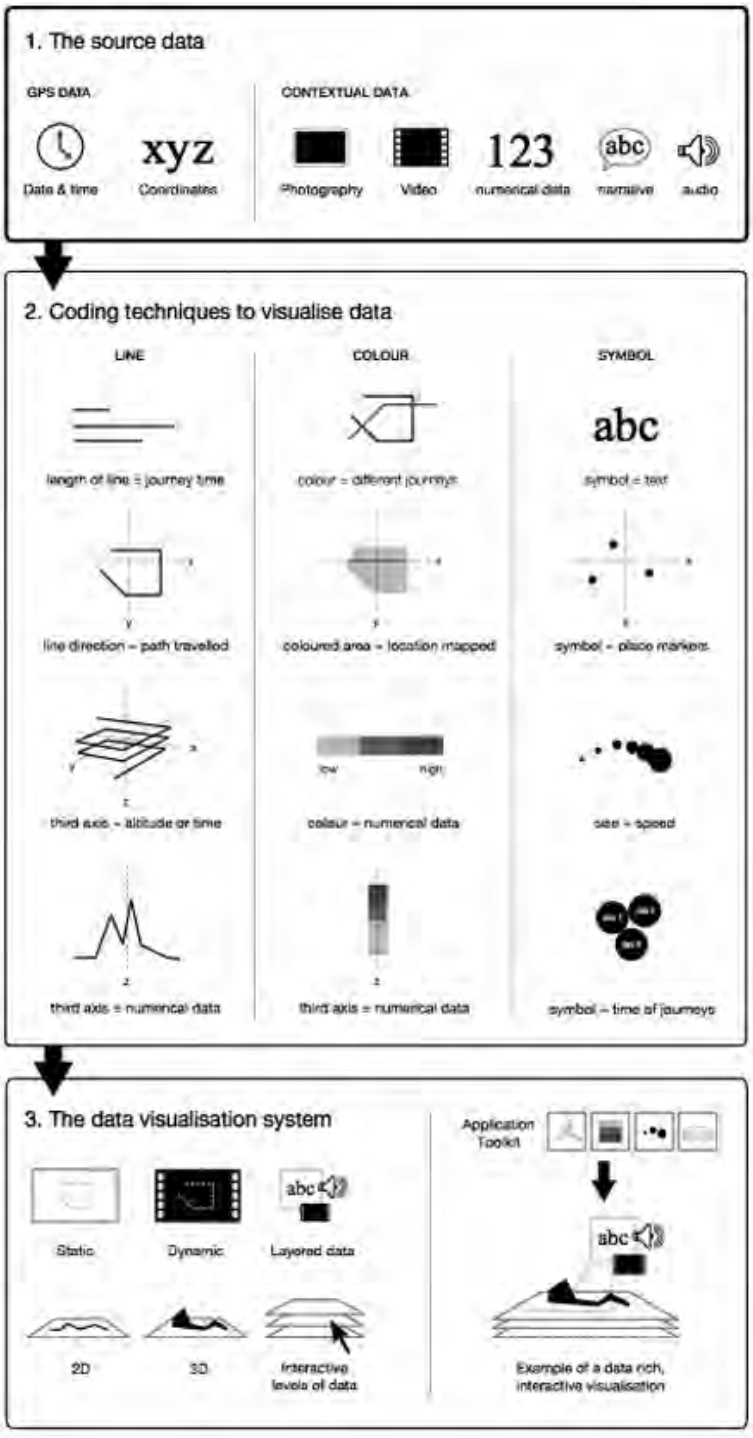
c. Symbol

There are two main forms of symbol use — the graphic mark (e.g. a cross hair) and text. The use of symbols becomes more interpretive when they form a meaningful link to the geographic location by allowing the viewer to reflect on the experience or social/cultural aspect of the location. For example in *AIR*, the location of symbols (representing a pollutant source) takes on a new meaning when combined with quantitative data revealing the emerging pollutant levels around the city.

New ways of visualising locational data

In performing the above analysis our aim is to develop an application that will enable practitioners to create new ways of visualising locational data. The classification system described above would be integrated into a sophisticated visualisation development tool similar to a multimedia authoring program. Users of the application may import a range of source data such as GPS, video, sound or text and manipulate its visualisation via a toolkit of pre-designed techniques (e.g. line, symbol, 2D or 3D forms). An application of this nature would enable practitioners to explore highly interpretative aspects of the locative experience such as geographic elasticity, temporal experiences, montage, audio manipulation and personal narratives (e.g. using biological, historical or cultural

Illustration 1
Created by Teresa Leung



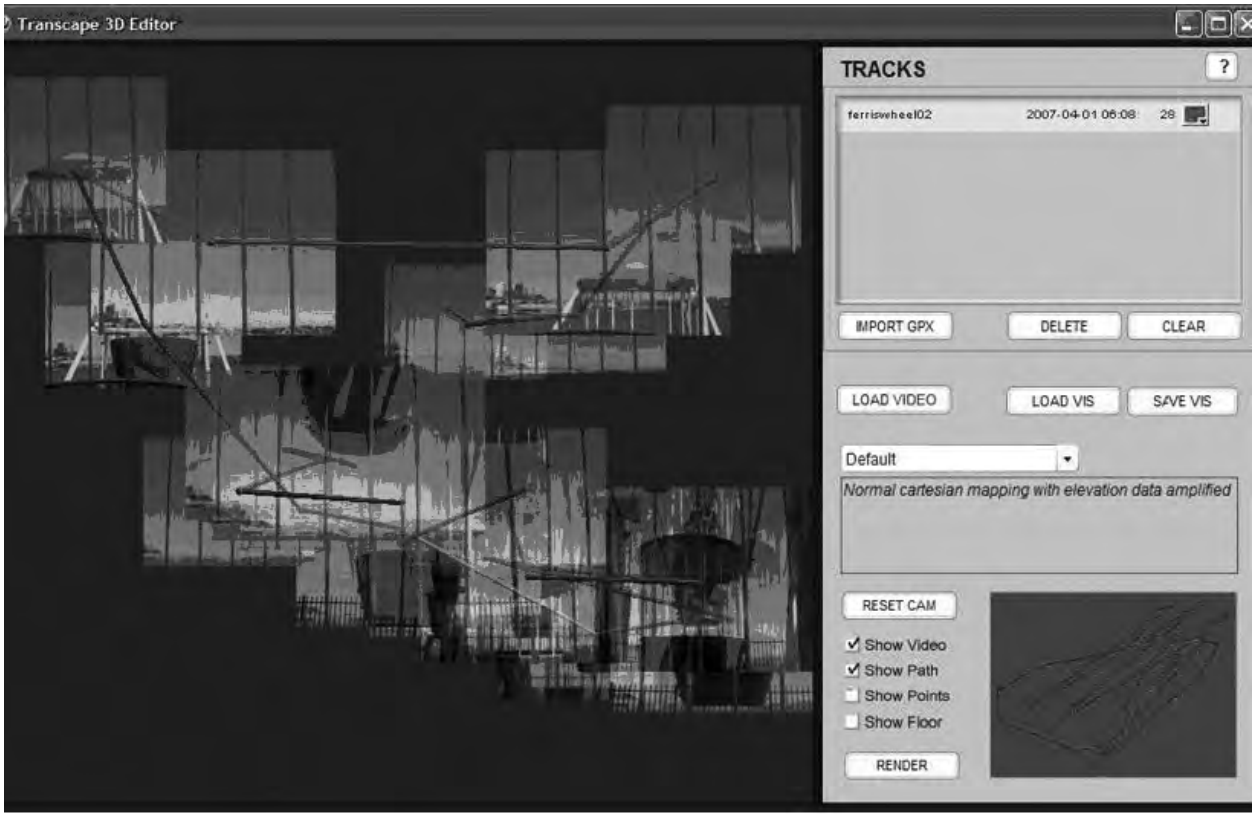
data) and thereby produce visualisations capable of enhancing the viewer's sense of physical specificity and embodiment.

Whilst still in an initial prototype phase, the CDD's *Transcape Editor*[7] (see illustration 2) is proposed for development in Macromedia Director and Macromedia Flash. Various source data can be imported and then manipulated through a suite of filters allowing the practitioner to create experiences which may explore 3D and 2D representations of the data in both passive and interactive modes.

Our motivation for developing this application is to facilitate deeper levels of engagement with locational data to create visualisations that extend our understanding of measurable and divisible space and time (physical specificity). We propose that visualisation of GPS data alone is insufficient for this purpose and it must be augmented with contextual data such as photography, video, biodata, narrative and audio to allow for an enhanced experience of physical specificity that goes beyond the indexical simulation of time and space (i.e. Cartesian X, Y, and Z coordinate mapping).[8] Methods of transforming GPS data are emerging that explore geographic and temporal elasticity. For example, this elasticity is achieved by using interactivity to reveal layers of experience in a non-linear system or by exploring systems that favour time and experience over geographic representation.[9] Such experimentations in visualisation could be readily explored and further developed through the *Transcape Editor*.

Ultimately, we wish to see locative arts further advance our understanding of geographical terrain as a topological space that is both real and abstract — to experience the physical journey in a new light, offering an alternative glimpse into an otherwise ordinary moment in place and time.

Illustration 2
Created by Elisa Lee and Adam Hinshaw



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5 Lee Elisa and Hinshaw Adam <http://www.educ.dab.uts.edu.au/cdd/?page_id=22>

6 SENSEable City Lab, MIT "Mobile Landscape I Graz in Real Time" <senseable.mit.edu/projects/graz/graz.htm#PDF> and Preemptive Media "AIR: Area's Immediate Reading" <pm-air.net>

7 Lee Elisa and Hinshaw Adam. 2006. "Report on Transcapes 0.3." UTS

8 Arnall Timo "Time that land forgot" <www.elasticspace.com/2004/07/timeland>

9 Thirion Steph with Medialab Prado "Cascade on wheels" <www.trsp.net/cow> and *Time that land forgot*

“MacArt”: Revolution on a Desktop 1984-1990

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Throughout the 1970’s and much of the 1980’s most artists had little use for the computer. The arcane language of programming and the results on a computer screen bore little apparent relationship to the work created by camera’s lens or the painter’s brush. This would change in 1984 with the development, marketing, and release of the Macintosh computer whose conception was heavily influenced by the local San Francisco Bay Area political and social events. These seminal events included the Free Speech Movement and People’s Park demonstrations in Berkeley, and the protests against the Stanford Research Institute involvement with the military-industrial complex, the War in Vietnam as well as the rise of the counterculture, environmentalism, the women’s movement and the use of appropriate technologies of the 60’s and 70’s which gave rise to the personal computer.

Nevertheless, it took a computer that was uniquely suited to artists before many would consider touching this technology for the first time. That computer was the Apple Macintosh, whose very DNA seems to speak (most literally) to artists whose main interests centered more on a critique of technology and its effects on society then in an exploration of the underlying technologies. A new crop of digital artists working between 1984 and 1990 had little connection to the earlier explorations in computer art but instead had a strong affinity to the goals and cultural ideals that would flower in the 60’s and 70’s.

These artists that were mostly working outside of the gallery system were supported by newly emerging alternative artist spaces (with independent publishers and curators) and would gravitate towards the Macintosh that was both engaging and transparent is such a way — as to allow them to leap beyond the technology (and the empty aestheticism of the previous generation of computational based computer graphics practitioners). It would allow them to introduce a new content charged body of work, that would both document and critically explore the rise of consumerism and consumer technology and its growing impact on society.

The founders of Apple Computer, Steve Jobs and Steve Wozniak grew up in the San Francisco Bay Area and were influenced by the counter culture and the turbulent political times of that era. Steve Wozniak clearly states his reasons for wanting to develop a personal computer in an April 2008 interview with Andy Kessler for Tech-Ticker. “We were going to change the world with revolutionized education. And we always spoke of the word, revolution. All these big social changes we were going to bring where you could organize groups of people for even if it was an anti-war marches or whatever… All this talk that came from people like Jim Warner, he was a professor at Stanford, he spoke of the great social benefits to humanity you know, that we were now going to be equalized and the big companies wouldn’t control our lives and I just felt that I was in the middle of one of the most important things in my life and I just want to help it happen. What I had to offer was my technical talents. I could build machines for other people who wanted to use machines to better humanity”.

To make machines accessible to people who never used computers, the Macintosh was designed to be the first consumer computer to employ a graphical user interface. Susan Kare was the artist who created many of the original icons and interface elements for the Macintosh. Her knowledge of art history led her to model much of her work on traditional folk art, craft based mosaics, and needlepoint. The early Macintosh system-alerts were patterned on the original Bauhaus logo. She created some of the first popular “pixel based typefaces” such as Chicago, and San Francisco which was based on the Dada type designs of the 1920’s and which also mimicked the cut and paste punk copy graphics of the 1970’s. Susan Kare was also the creator of the infamous “Pirate Flag” raised by Macintosh development team above the Apple headquarters during the process of creating the innovative computer as a possible means of expressing their “other-ness”.

Susan Kare, Apple Pirate Flag, 1983

The Macintosh was notable in that it included an easy to use programming environment, called HyperCard that could be used to create interactive applications, databases and games. It allowed non-programmers to easily realize a myriad of creative works. HyperCard was the creation of Bill Atkinson who also created MacPaint. Bill Atkinson was a programmer and an accomplished photographer who was influenced by Jeff Raskin and by ideas from the Architecture Machine group at MIT (a predecessor to the later MIT Media Lab) as demonstrated in a program called "DataLand" that allowed users to manipulate graphical objects in spatial arrangements. Bill Atkinson recognized the easy to use power and importance of HyperCard's ability to allow for creative control of what was often seen as a difficult to machine to mater. He called this program a "software erector set" At his insistence, HyperCard was to be included for free with the Macintosh. HyperCard was an immediate success as it allowed people to access the world of interactive programming by using the metaphor of a stack of recipe cards. HyperCard was one of the first popular implementations of hypertext and hypermedia and many of it's legacies include the creation of HTTP and JavaScript, countless "choose your own adventure games," interactive books, educational teaching aids, and multimedia CDROMS.

Lynn Hirshman Leeson a filmmaker, photographer, and performance artist was one of the first artists to make use of Apple's HyperCard. In her piece "Deep Contact" (1984-89) with programming assistance from Sara Roberts, she created an interactive touch sensing video laserdisc about the relationship of intimacy to technology. It was the first touch screen interactive sexual fantasy videodisc as well as incorporating a surveillance camera's live captured images that could appear superimposed on the screen. Lynn Hirshman Leeson's work "Deep Contact" blurred the line between the viewer and participant, expressed the empowerment of feminist sexuality, and exploded the traditional narrative formally controlled by a work's individual author.

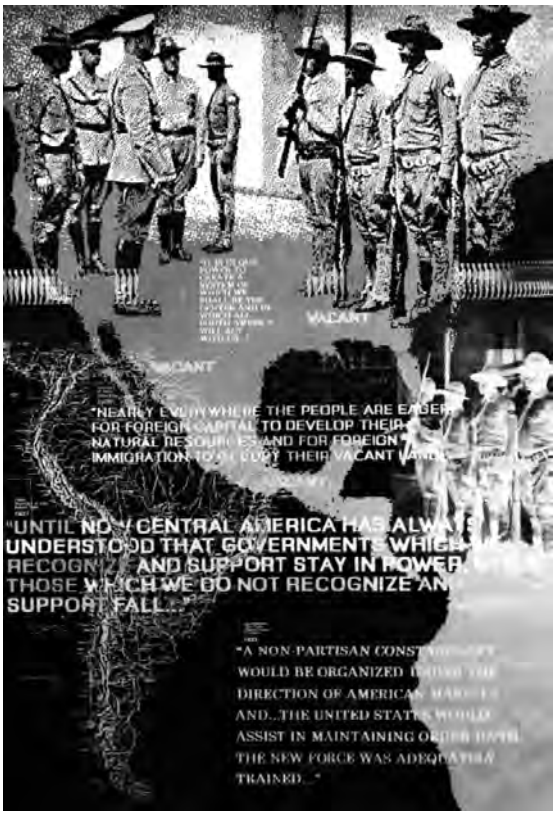
Michael Tidmus an artist, graphic designer, and activist found out that he had AIDS in 1986 at a time when few people had access to reliable and unbiased information about the cause, transmission, prevention, and maintenance of the disease. The following year in 1987 (as soon as HyperCard was publicly available) he published the "AIDS Stack" using HyperCard to organize all of the currently known information about AIDS at that time. Since this work existed in digital form, he distributed it freely and widely, posting it on independent Bulletin Board Services, the WELL, Public Domain Archives, Usenet, and BITNET LISTSERV lists.

HyperCard would later be used to create many of the CD-ROM titles published by Voyager Company such as Laurie Anderson's Puppet Motel and the Resident's Freak Show. The original version of the popular interactive computer game, Myst was produced using HyperCard. Ward Cunningham, inventor of the WIKI built his first WIKI version on HyperCard. HyperCard was the first introduction to hypermedia for many people, which in a few years would be come commonplace with the advent of the World Wide Web. Chris Crawford would program a "simulation game" "Balance of Power" in 1985 on the Mac, where you are rewarded for conflict resolution

and NOT blowing up the world. Thomas Knoll created an experimental Macintosh program called Display in 1987, which evolves into Image Pro and eventually becomes Photoshop which sparked a revolution in digital photography.

In 1985, just a year after the visually based Macintosh debut, Apple released the Apple LaserWriter printer with a Raster Image Processor that included Adobe's PostScript interpreted page description language. This allowed for the printer to accurately render vector-based images and outline fonts at near typeset quality. This set off a revolution in modern typeface design and allowed another revolution known as Desktop Publishing. "What You See Is What You Get" Desktop Publishing put powerful tools in the hands of artists and designers.

Paul Rutkovsky an artist whose work explores consumerism and the environment had previously published books, began using the Macintosh in 1984 to produce DOO DAAA FLORIDA as a quarterly forum for artistic and literary expression within a thematic format. He says this about his work in an undated artist statement: "It has become increasingly important for me to use the computer and consumer level technology as playful tools connected to our culture. In our society where technology is viewed as a messiah and a quick fix to solve our social, political, and economic problems, I've put myself in this playground to responsibly take control and play…using technology to critically poke fun or satirize how it's used in our culture seems to humanize it, and allows us to view or critique it from a different perspective." Craig Hickman self published "Signal to Noise" using the Laserwriter Printer in 1988 and later went on to create the children's paint program, "Kid Pix." Craig Hickman states on his Pixelpoppin website: "The Macintosh was different. It was totally graphical so the visual possibilities were much greater. Most of all, the Mac seemed to have people with a consistent and enlightened vision behind it. The user interface was intelligent and beautiful."
Artists and designers who were drawn to the Macintosh early on included photographer Esther Parada a former



Esther Parada, The Monroe Doctrine: Theme and Variations, 1987

Peace Corp volunteer in Bolivia who explored the interventionist role of America in relation to the rest of the world through the use of current events and historical patterns. Michael Saenz used MacPaint to Illustrate "Shatter," the first "computerized comic" in 1985. April Greiman a graphic designer was hugely influential with her "New Wave Graphics". Barbara Nessim brought a personal sense of humanity to works produced by the computer, a medium that was often regarded as cold and mechanical. Trici Venola brought a punk art aesthetic to her imagery and also created the first ever disc of "Clip Art" for the computer. These first generation of desktop computer artists spawned a revolution that is still being felt today, as they transformed a previously esoteric computational machine into an indispensible tool for creative and critical artistic production.

Far from the Main Stream

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Abstract

This paper proposes that today's computational and generative arts are the legitimate inheritors of the 20th century traditions of constructivism, systems, conceptual and process art.[1] Often formed from close collaborations between art, science and technology this field of work also exhibits important aspects of contemporary culture and thought, including emergence, non-linearity, hyper-mediation, interaction, networking, self-similarity, self regulation and so on. They are also one historical root of the contemporary science of artificial life.[2]

The Golden Age

Artists and other creatives began to use some of the earliest computer systems. In 1951 Geoff Hill wrote a simple music generator to run on CSIRAC — Australia's first computer. A year later Christopher Strachey wrote *Loveletters*, a generative text work which ran on the Ferranti Mark 1, the UK's first commercially produced computer system, at Manchester University.

By the early 1960's visual artists including Michael Noll, Bill Fetter, Freider Nake and Chuck Csuri had begun to employ digital computers and pen plotters to make their work. In 1965 Max Bense curated the first exhibition of computer art featuring the work of Georg Nees at the *Studiengalerie der Techischen Hochschule* in Stuttgart. A few months later Nees and Nake showed their work at Stuttgart's *Galerie Wendelin Niedlich*. By 1968 Jasia Reichardt could curate *Cybernetic Serendipity*[3] at London's then-new ICA Gallery as the first historical survey of the field. The same year Jack Burnham wrote *Beyond Modern Sculpture* where he suggested that the future of the discipline was autonomous, reactive and interactive "life-simulation systems".[4]

Burnham's own show *Software — Information Technology: Its New Meaning for Art* was held at The Jewish Museum in New York in 1970. It was intended to draw parallels between conceptual art and theories of information such as cybernetics, systems theory and formal languages. Across town at the MoMA Kynaston McShine's *Information* show was an eclectic and idiosyncratic mix of conceptual formalism, linguistic and information theories and socio-political activism. Although some artists participated in both shows their ethos was distinctly different. Burnham proposed a revolutionary new direction for art along with the adoption of methodologies that would have closely aligned it with science and technology. McShine adopted a more traditionalist concept of the arts and *Information* included aspects of science and technology within an appropriative framework that proposed a different revolution and arguable one that was more acceptable for the conservative artworld.

The humanities educated graduates who led the artworld into the 1980s identified more with the eclecticism of McShine than with the analytical vision of Burnham and adopted the emerging theories of postmodernism. This was before the era of personal computing and this new generation had no experience with digital systems and felt challenged by them. They distrusted information technology which they associated with military agendas and what they later called the military-industrial-entertainment complex.

So, for a brief time in the 1960s this new computational genre — a new mutation of the arts — had the potential of becoming a central feature of the mainstream artworld. However by the early 1970s the golden age was over. Burnham's revolutionary vision had been too challenging and was rejected and sadly, and in my opinion incorrectly, identified with the "old world" of modernism, as was the work of many of the artists he had championed.

Meanwhile, in Academe

Just as the mainstream turned away from the digital arts the education sector got on board. In the UK the Polytechnics were formed by amalgamating independent colleges of art, engineering, etc… and created an opportunity for artists to learn about computers.[5] Leading graduate schools like the Slade School of Fine Art at University College London acquired their own

powerful (for the day!) computer systems.[6] The Slade postgraduate school was influenced by both systems and conceptual art and scientific concepts like cybernetics, artificial intelligence, generative systems, emergence, non-linearity, automata, etc… Visitors included Harold Cohen who was then working on an early revision of his "expert" system *AARON* and Edward Ihnatowicz the pioneer of artificial life in the arts who had recently completed *The Senster*. The Slade's Experimental Department existed from 1974 to 1982 and attracted artists from around the world and the discourse was intense. It was here that the major contemporary dialogues of the computational arts emerged. It has also been recognised for its pioneering work into what a decade later became known as artificial life or alife — an interesting and rare example of an art movement providing a foundation for a new scientific discipline.

The mainstream artworld remained unconvinced and reluctant to engage with work of this kind despite its strong heritage and roots in artistic tradition and practice. Instead they perpetuated the conservatism of *The Shock of the New* and promoted works based on ideas of novelty for its own sake that had been established in the late 1950's and 60's. This has led to a contemporary artworld that is little more than a division of the fashion industry where leading practitioners model the latest couturier and a curator of the Saatchi Gallery can describe works from their collection as disposable "one liners". In recent decades the artworld — which sadly includes the educational institutions — has rejected tradition, denied history and discarded skill. Even more sadly this modus operandi has migrated from its home in Europe and the USA and has been exported to developing cultures. They now produce works that would have looked at home in the London and New York galleries of the 1960s and which often have little to do with the traditions that sustained those cultures for centuries. In hindsight we can perceive this as a perhaps unwitting, but nevertheless victorious, act of cultural imperialism.

Past and Future

The computational and generative arts have survived this hostile and unsympathetic artworld for four decades in a marginalised but self-sustaining form. They have been maintained by what I have referred to elsewhere as "an international salon des refusés"[7]. It's a global underground whose emergence was aligned with events like the founding of *Leonardo* in 1967 by Frank Malina, the New Tendencies colloquy *Computers and Visual Research* in Zagreb and *Cybernetic Serendipity* (both in 1968). Later it was sustained by organisations like the *Computer Arts Society* (1969-), *Ars Electronica* (1979-), the *SIGGRAPH Art Show* (1981-) and *ISEA* (1990-).

This work sits comfortably in the broader field of art, science and technology and often involves interdisciplinary collaboration. As such it can be framed in the context of the 20th century constructivist tradition. Unlike that early constructivist work, which can be placed within the idealistic narratives of modernism, this new post-constructivism employs inherent and relativistic concepts of process, emergence, non-linearity, hyper-mediation, interaction, networking, self-similarity and self-regulation. As such it can be identified with the mainstream dialogues of post-modern culture. However its strong ties to its past suggest that it is not a part of the mutually exclusive dialogues of modernism versus postmodernism that inundate the mainstream artworld.

Instead it invokes a new synthesis, a new bridge between the past and the future that can enable us to recognise novel tokens of value and identify original meaning in our world.

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Mapping and Psychogeography

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Introduction

This paper presents mapping and psychogeography as the background for an artistic experimentation done with mobile technology. In December 2007, with the project Lencois.art.br (www.lencois.art.br), local habitants, especially kids, created an artistic map of urban experimentation of the city Lençóis, in Brazil. Having asked to wander around town with a mobile phone and record (through image and sound) what they wanted, they highlighted different parts of the town drawing a line of their path. The result, and documentation of the practice, is a colored animated drawn map with photos, audios and videos that reflect these kids' experimentations of their own town.

The motivation: The situationist *dérive*

This project was created by the motivation of practicing the Situationist's psychogeography and *dérive* using mobile technology to take notes of it. The idea was to create psychogeography view of Lençóis town. As Guy Debord (1955) states:

> Psychogeography could set for itself the study of the precise laws and specific effects of the geographical environment, consciously organized or not, on the emotions and behavior of individuals...

In the project the participants practice psychogeography through *dérive*, a practice encouraged by the Situationists in the 50s as a way to encounter the urban space and experience it differently from our typically use of the city. As Guy Debord (1958), in "Theory of the *Dérive*" said,"*Dérives* involve playful-constructive behavior and awareness of psychogeographical effects, and are thus quite different from the classic notions of journey or stroll."

The participant of the project wandered around town, alone or in small groups, with this spirit of playfulness and awareness. They stopped their routine to engage on an unexpected discovery of the city, open to new encounters and visualizations.

Map(less) location

Lençóis is a small town located in the countryside of Bahia. Different from large cities, it does not have a precise map of its streets available to the public. Even website as GoogleMaps, MapQuest, Yahoo!Local does not have a map of the town. For someone used to living in large cities, a place with no map and no concern for one is unthinkable.

The process

The mapping project was done during Sumidialogia#3.[1] For three days people were invited to go around town experimenting, interpreting and deconstructing it. We have created a stand inside the central marked with the project flyers, some paper, colored pens and a mobile phone. There, we explained the project, asked people to choose a color to draw their path on the map (an A3 print-out with a rough sketch of the city), and gave a mobile phone for them to use to record audio, video, photos or text of their experience. They could send a MMS to the project blog website broadcasting their production, and the material received by MMS was automatically posted on the blog.

Many children showed up to collaborate with the project and the majority of them have never used a mobile phone before. Some after few minutes of explanation felt comfortable with the media, others had difficulty with things such as the directional round button of the mobile phone. In not being an expert of the media, some children made videos thinking they were taking photos, others did not remember to stop the recording and continued on… I can consider these "video photos" as a détournements of the mobile production. As Guy Debord and Gil J. Wolman (1956) said that "*détournement* is less effective the more it approaches a rational reply." The image distortions created by these children are far from a rational reply; they are mundane expressions of their city experience.

We could see the enthusiasm of people in doing something out of their routine, and also how seriously many took the project. The following day, we met participants' children entering a cyber-cafe with the project flyer. They told us they were going to check their work online. The importance of producing something that actually goes online was also a point for them. For most of them this was the first time that something they have done was published somewhere. They were proud of being "online". As many (Manktelow 2002; Schiano et al. 2004) say "I blog therefore I am", on that day they "were".

Mobile phone

Even though there are more than 100 million mobile phones in Brazil, more than half of that are pre-paid phones with little uses of the camera and recording facilities. The choice of using mobile phone as the recording tool of this experiment is because it is a relatively affordable tool with many features in one device and it can broadcast the material from the field. Paul Levinson (2004), in his book "Cellphone: the story of the world's most mobile medium and how it has transformed everything!" praises mobile phone saying:

> The cell phone is currently the epitome of mobility in media because it allows both reception (like the book and the transistor radio) and production (like the Kodak camera), allows this immediately and long distance (like the transistor radio), and allows this interactively (like no prior mobile medium). (Levinson 2004: 52)

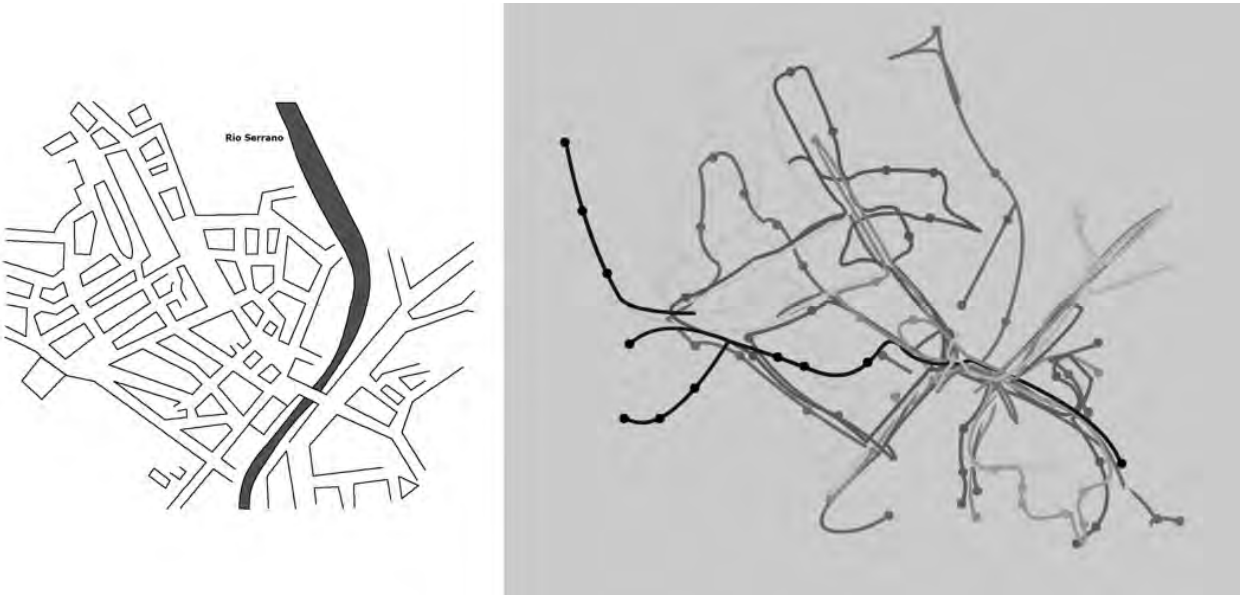
With a mobile phone, these wanderers recorded their paths: photographing, making video, audio and texts of the scenery and experienced emotions. Together with the mobile, they carry a "sort of" paper map where they drew their paths. After that, all the maps were posted, creating the Lençóis mapping based on these people's experiences.

Concluding map

The confusion of colored lines and dots on the light gray background is the result of the mapping experience in Lençóis. The map is a visual representation of a map described by Deleuze and Guattari when theorizing on rhizome.

> The map is open and connectable in all its dimensions; it is detachable, reversible, susceptible to constant modification. It can be torn, reversed, adapted to any kind of mounting, reworked by an individual, group or social formation.
> (Deleuze and Guattari 2004: 13)

The *Lencois.art.br* map corresponds to this definition, it was open to anyone to create a line (path) and



connectable points (videos, audios, photos) and it was modified during the process. Accordingly, it increased and modified itself on the way when more people were adding lines.

> A map without multiple entrances — a map that denies multiple interpretations — is a map that discourages change, that presents the world as a *fait accompli* or worse, a world without hope.
> (Galloway 2005)

Keeping in mind the above statement by Anne Galloway regarding maps, I can say that *Lencois.art.br* is a map that encourage change and hope. The ones that wanted to participate created it openly, and the navigation of the interactive map can lead to multiple interpretations. Concluding, this map created most of all by children can be a practical example of today's map, the *flowing* map.

1 URL: http://submidialogia.descentro.org

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Locating the Australian Blogosphere:
Towards a New Methodology

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Background

The blogosphere allows for the networked, decentralised, distributed discussion and deliberation on a wide range of topics. Based on their authors' interests, only a subset of all blogs will participate in any one topical debate, with varying intensity, based on a variety of sociocultural factors: a blogger's time, interest, and awareness of current discussion; their status in the blogosphere; the topical focus of their contributions; and their political ideology, gender, age, location, sociodemographic status, as well as the language they write in.

In combination, these factors mean that networked debate on specific topics in the blogosphere is characterised by clustering (Barabási, Albert & Jeong, 1999; Newman, Watts & Strogatz, 2002; Watts, 1999). Individual clusters in the topical debate may be able to be distinguished according to certain factors: for example, their topical specialisation (focussing on specific sub-topics of the wider debate) or their shared identity (e.g. a common national, ethnic, or ideological background).

Such blog-based debate is difficult to conceptualise under the general terms of the Habermasian public sphere model (which as formulated depends on the existence of a dominant mass media to ensure that all citizens are able to be addressed by it; see Habermas 2006); at a smaller level, however, it may be possible to understand networked discussion on specific topics in the blogosphere to constitute what may be described as a public spherule (Bruns, 2008). It may be that when layered on top of one another, the public spherules on various topics of public interest can stand in as a replacement for the conventional public sphere (whose existence is undermined by the decline of the mass media as mass media; see Castells, 2007). This *networked* public sphere would necessarily be more decentralised than the conventional, Habermasian model of the public sphere.

Our project aims to develop a rigorous and sound methodology for the study of this networked public sphere. (For a full outline of the methodology, see Bruns *et al.*, 2008.)

Research framework

To establish a solid quantitative picture of blog-based topical discussion networks and their cluster patterns, automated data collection and analysis is necessary. Any tools used for this purpose need to be able to distinguish between the different units of analysis: in terms of content, the blog posts themselves, blog comments, blogrolls, and ancillary (static) content; in terms of links, topical links in blog posts, commenter-provided links, blogroll links, and generic links elsewhere on the site.

Distinctions between these different categories build on the following assumptions:

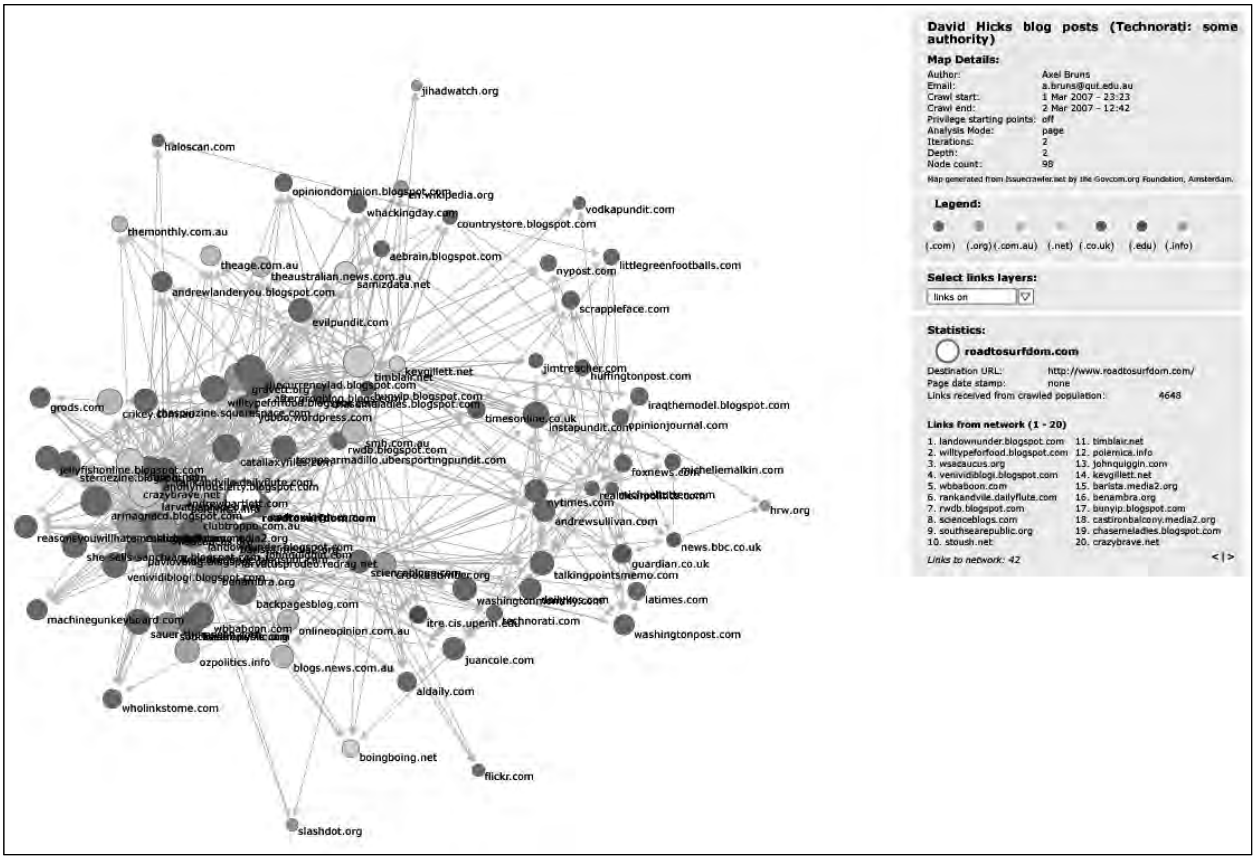

Figure 1: Network of Bloggers in the Australian Political Blogosphere (from Bruns, 2007)

Content

The core underlying assumption is that *the vast majority of bloggers write about topics which interest them* (rather than claiming an interest they don't have). This should not be understood to claim that bloggers cover *all* the topics they are interested in, however — the topics covered on any one blog constitute merely that subset of all interests which a blogger has deemed it acceptable to reveal publicly to a general readership. On this basis, we assume that:

1) The complete collection of all blog posts for a given blog provides a reliable indication of the interests of the individual blogger (as expressed publicly); the development of these interests may be further traced by tracking changes in topical coverage over time.

2) A comparison of bloggers' interests (in total, for specific periods of time, and/or in relation to broad topical domains) across multiple blogs indicates the distribution of topical interest across the blogosphere (at least for the subset of the entire blogosphere included in the analysis).

Links

The core underlying assumption is that *links to other Websites indicate a recognition of the linked content as 'interesting'* (for a variety of possible reasons, and potentially indicating approval or disapproval). By extension, *this also confers a certain amount of reputation and attention on the creator of the linked content*.

We also assume that linking patterns predict traffic and influence. The more incoming links any piece of content has, the more likely visitors are to see it, and this increases its potential to influence readers. Further, the outgoing links of sites which themselves receive many incoming links are more powerful in directing traffic and conferring influence than the outgoing links of little-known sites. *Google*'s PageRank and *Technorati*'s authority ranking operate on similar assumptions.

On this basis, we assume that *patterns of interlinkage indicate the existence of a network of attention. These patterns are indicators of visibility and influence. In these patterns, the balance of incoming and outgoing links for any one site or page warrants special attention.* Specifically,

1) Patterns of interlinkage between contemporaneous blog posts indicate the existence of a network of *debate* on specific topics. Posts with many incoming links may make an important (possibly controversial) *original* contribution; posts with many incoming and outgoing links may make an important *discursive* contribution; posts with many outgoing links may be *introductions to* or *summaries of* ongoing debate.

2) Aggregated from the level of the blog post to that of the blog, these patterns of interlinkage also indicate the role of the overall blogs in topical debate networks. Blogs with many incoming *and* outgoing links may be understood as *hubs* in the network; sites with many incoming links may be central *sources* for information; sites with many outgoing links may be *distributors* of attention to other members of the network. A comparison of these short-term debate networks over time and across topics indicates the fluctuation of centrality; sites whose centrality remains high over time have significant authority overall, while sites whose centrality is high only for specific topics have significant authority only for those topics.

Research methodology

The three key elements of the research process are data gathering and processing, content analysis, and link network analysis. Subsequently, it is also possible to extract and identify common patterns and interrelations between content and network analyses. Additional work beyond these initial stages could extend into social network analysis, to identify social networks within the blogosphere.

Data Gathering and Processing

Most blogs offer RSS feeds which alert subscribers to new posts, but RSS feeds in themselves are an insufficient data source: some contain only excerpts from whole posts, and many do not contain links, images, or other functional elements of the blog posts. For a full and reliable analysis, it is therefore necessary to scrape entire blog pages with all textual and functional elements. This, however, also creates problems as it will include the site's navigational elements, blogrolls, comments, ads, and other ancillary material in the data gathered. This means that scraped blog pages must be further processed in order to separate salient content (the blog posts itself) from ancillary material; in the process, other salient elements (blogrolls, comments) can also be extracted in separate categories. Such processing is non-trivial and time-consuming. Further, page layout and formatting is inconsistent across blogs, and the scraped data processor must be trained for each category or sometimes for individual blogs.

For practical reasons, and unless direct access to the up-to-date page archives of a commercial search engine is available, the number of blogs scraped will also need to be limited; it is not feasible to scrape the entire blogosphere, or even a large part of it. Instead, our methodology must content itself with focussing on a specific and manageable part of the blogosphere — for example, Australian political blogs. Coverage of a large part of Australia's political blogosphere is possible, with the core rather than the far periphery of the network is the focal point of analysis. Even here, though, the list of blogs (and related sites) to be scraped should be viewed as open and growing, and to be established over multiple iterations of the scraping process.

Content Analysis

Content analysis builds on the data gathered in the scraping process, operating on the level of blog posts. It uses automated large-scale quantitative content analysis tools such as Leximancer (2008) to identify terms, themes, and concepts in the data (or in subsets of the entire corpus of data), and their interrelationships. Such automated content analysis should be further followed up by reading selective posts and comments in a more qualitative examination of specific issues, concepts or conversations. Potential approaches to content analysis include:

a. Determination of overall key terms, themes, and concepts across all blogs.
b. Change of themes over time.
c. Identification of key themes for individual bloggers or groups of blogs.
d. Comparisons of treatment of key issues between particular blogs and blog communities, or between clusters of blogs.

Network Analysis

Network analysis focusses on the network of interlinkages between blogs at blogroll, blog post, and blog comment levels. It uses automated large-scale network analysis tools such as VOSON (2008) to trace the networks of interlinkage and identify clusters of closely interlinked nodes in the network, distinguishing also between inlinks and outlinks. Potential approaches to link network analysis include:

a. Identification of static networks of blogs using blogroll links.
b. Identification of discursive networks on specific issues using blog post links.
c. Identification of discursive networks on specific topics above the post level.
d. Identification of general and specific discussion leaders.

Combination Analyses

There are many opportunities for correlations between conceptual and network analyses (and for further triangulation using additional sources, including closely reading posts and threads, comparison with information about key themes in the mainstream media during specific timeframes, and correlation with site rank indicators such as *Google*'s PageRank or *Technorati*'s authority index). Indeed, neither content nor network analyses in isolation provide a detailed picture of the blogosphere; there is a need to augment one with the other and with other data. Combination analyses include:

a. Relating network fluctuations to changing topical focus.
b. Correlating network and concept clusters.
c. Identifying distinguishing features of core blogs.
d. Correlation with external measures of site rank.

Further opportunities for combined analyses may be identified during the course of our research. Generally, all analysis models outlined above may be deepened through close readings of blogs, in addition to automated methods.

Our presentation at ISEA2008 will demonstrate this research approach in practice, and showcase early findings from an exploratory study of the Australian political blogosphere. (For a full outline of the methodology, see Bruns *et al.*, 2008.)

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Visualizing as Exorcism: Learning from Viruses

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A growing phenomenon

The Web contains a great amount of pictures, simulations and other samples created thanks to the development of an increasingly variety of visualization technologies and methods.[1] Among others, websites such as Visual complexity,[2] (visualization of complex networks), companies such as ExVivo[3] or 3D Science[4] (scientific animation and medical imaging) or, finally, computer and security enterprises such as F-Secure[5] (visualization of malware and information flows) witnesses the diversity of techniques and methods, as well as technological devices used.

Thanks to these technologies, very small and subatomic particles, as well as dynamic agents, could now be displayed, shared and analyzed among colleagues or in a website. Computer and biological viruses constitute two important examples. While information visualization[6] is able to trace their trajectories and behaviors, scientific visualization[7] is able to provide them a concrete form.

Is visualization exclusively about providing better accuracy and efficiency of data collection and analysis? The above technologies should be definitely welcomed as a step forward in understanding and disseminating phenomena that normally come in the form of data only or that had previously defied visualization. However, could they not rather be read as forms of exorcism to the "unknown" and against the [real or constructed] hegemony of "fear"?

Controlling the unknown

Virilio, quite explicitly, indicates how knowledge, in Western society, is perceived as the ultimate form of control. Knowing is the continuation and realization of the myth of the frontier, which he explodes beyond the boundaries of the humanly visible and the geographically defined territory of the physical (Virilio 2000). While reconfirming the centrality of sight as one of the major instruments of knowledge, the above comment establishes an indissoluble link between "not-knowing" and "fear". If knowing is associated with control and mastery over the unknown then, not-knowing is connected with uncertainty and evokes a sense of uneasiness and anxiety. As Robins, citing Canetti, claims: "…fear of being touched by the unknown, this is the fear that never goes away. It is with this fear that we must come properly to terms" (Canetti in Robins 1996: 12).

The sense of sight plays an important role: for Bauman, for instance, not-seeing or not being able to see far enough is one of the main factors that produce anxiety in human beings. In explaining why this could happen, Bauman recalls Lucien Febvre's famous description of "the experience of living in the XVI century Europe" which he summarizes with just a few, telling, words: *peur toujours, peur partout* (Bauman 2006:2). Febvre had connected the ubiquitous presence of fear to darkness, "..which started just on the other side of the hut door and wrapped the world beyond the farm fence…"(4).While "…darkness is not the cause of danger, it is the natural habitat of uncertainty(5)," the place where anything could happen.

Seeing comes to the rescue of the absence of knowing and, as a result, becomes a necessary weapon against fear. It constitutes a reassuring materialization of a hypothetical threat that, before being visible, cannot be either concretely grasped or visually described. To use Virilio again, the condition of not knowing materializes as a continuously shifting horizon that causes fear, but, at the same time, can be conquered and turned into the known. Human explorations pushed the border of the unknown farther away, and increasingly powerful technological instruments such as microscopes and telescopes were devised to conquer the infinitely small and the extremely big or far away.

Given their subatomic size (which approximate invisibility), and their immaterial (a bundle of data) or aleatory nature (ungraspable dynamism and inseparability from host), viruses have deserved to be added to the category of the "unknown" and the "indeterminate". In addition, the very companies and organizations that

produce and disseminate information about viruses seem to find it convenient to leave the above ideas unchanged and to even perpetuate them. However, to argue that this tendency is solely the product of a massively calculated and cynical operation of manipulation is to dismiss the very definition of fear and its causes.

For Massumi, fear is a reaction to a "quasi-cause" (Massumi 2005:35) that has not manifested yet. It corresponds to no concrete manifestation at all. Fear could be engendered from the memory of past events. However, past events do not provide any clue that would help tell what form the next threat will take or how it will materialize. One can only imagine the current threats as potential: sooner or later, in a time and space that is unknowable and impossible to predict (although hypotheses and predictions are countless), viruses, in the form of an emerging infectious disease, or as powerful and skillfully designed worms, will strike, with consequences that may (or may not) be disastrous.

Ultimately, different motivations and legitimate anxiety are equally weaved together to promote the same idea of viruses as dark entities, as unknown and mysterious agents. Thus, also the generation of fear all depends on the — purposely or not — constant maintenance and perpetuation of their indeterminacy and mystery.

Imagining against fear

Despite being principally interpreted as threats and, as a result, being feared dearly, viruses represent a challenge to explore and to move the boundaries that delimit the frontier of the known. Paradoxically, the very difficulty to capture viruses in any static mode, to detect them under layers of coded material or to visualize them using the human eye, has unleashed an unprecedented urge to imagine them. The same elements that cause anxiety and fear have become the starting points for endless creative interventions, including newer interpretations, paradigms of representation, as well as new uses and applications.

Thus, the Visualization and mapping of all categories of viruses incorporate both the curiosity in imagining the unknown as well as the anxiety it engenders. On the one hand, "…image technologies are involved in the way we know, experience, feel about and respond to the world"(Robins 1996: 5). Seeking and finding new ways of knowing and seeing is "continuing the modern struggle against the limitations of the actual world"(17). On the other hand, the technologies of visibility are also used as a protective screen that transcends, exorcises and separates humankind from the fearful chaos of the world, by making every object visible, yet maintaining it substantially virtual. In fact, objects are "made visible" through a process that gathers, interprets and represents information about them, thus "neutraliz(ing) and contain(ing) what provoked anxiety and distress"(20) and "transform(ing) the symbolic into the geometric" (McCormick at Al. 1987).

As a result, images, schemes and other visual representations of viruses cannot be merely interpreted as means of "explanation" and "illustration" as well as forms of "knowing," and "controlling". The considerable creative drive and variety that characterizes these practices suggests that we might interpret them as alternative means to both voice and liquidate a quite resilient demon of fear unleashed by their object of inquiry on the one hand, and by a particularly turbulent socio-political climate on the other.

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1 A periodic table of visualization methods http://www.visual-literacy.org/periodic_table/periodic_table.html

2 http://www.visualcomplexity.com

3 http://www.xvivo.net/

4 http://www.3dscience.com/

5 This company is particularly interesting because it was the first to visualize information in computer viruses through a virological approach http://www.f-secure.com/weblog/archives/f-secure_bagle-ag_visualization.mov as well as through an epidemiological approach http://www.zdnet.com.au/video/soa/Antivirus-firm-gets-graphical-to-fight-malware/0,2000065477,22172991p,00.htm

6 An easy definition can be found here http://www.infovis.org/

7 Definition http://www.cc.gatech.edu/scivis/tutorial/tutorial.html

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The Living Future: Nonorganic Life
Nanotechnologies and Contemporary Art

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The contemporary art proceeds from the premise that a new media phenomenon is in principle devised by the artist as an innovation; i.e. it is assumed that resulting from his activity there originates a reality *with a complicated structure of decision space* (antinomies, bonds and relationships). Based on this understanding is it rightful to speak of innovativeness or active development of a new media carrier.

In the territory of contemporary art, the process going "from research to formation" of a new medium is supported by the so-called "coevolution" strategies representing a synthetic form of scientific and artistic creative work that embraces not only interpretation but also constructive activity. To find out where the essence of "coevolutionary" development strategies in the nanotechnology field lies, we shall bring in a notion of *metabola*. By *metabola [Greek* metabole — *change, metamorphosis] we understand an organization type of information physical carrier that mirrors compression of qualitative and quantitative characteristics of a nonorganic structure due to activating, modeling or taking into account metabolic processes' influence.* Thus far, among the examples of such metabolas that incorporate hybrid properties of a silicone world and those of biosystems one can name nanomotors, bacterial engines, quantum biosensors, DNA switches, etc.

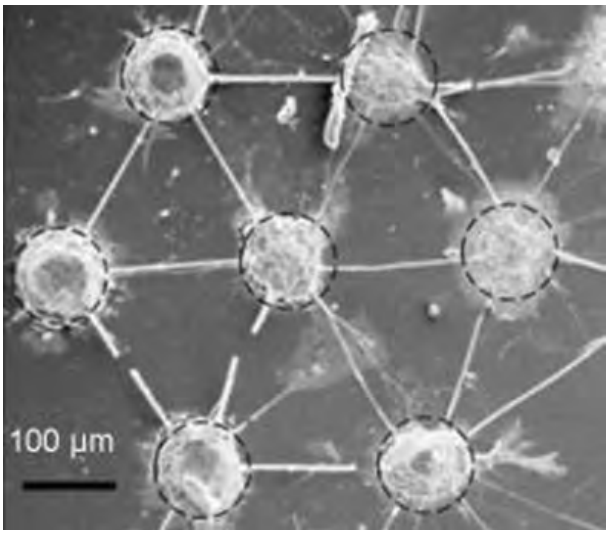

Image 1: Example of metabola (Neural network of living cells, joined together by nanotubes)

It is known that in biology metabolic processes imply interchange of matter, energy and information. When we point out that the main system requirement of nanoart is *structural compression of nonorganic matter*, we imply thereby *a necessity of formation of various forms of the inanimate* at the cost of provision of media carrier with the properties of growth, variability, self-preservation and reproductivity. All those properties of *metabolas* help us to proceed from observation of discrete objects in a discrete area to the description of materialized dynamic systems in the area of relations. In other words, it goes about comprehending the phenomenon of a new media environment existing "on the brink of chaos", duality and hesitation, when bonds and relationships that make up a unity of the inanimate in assembly are created by way of metabolic processes. The main medium analyzed here is the nonorganic life, and the main issue under study — release of the artistic message existence time at the expense of interest to encoding, conversion and changing of this message carrier itself.

It is evident that on the "nano" level we can no longer be sure of the correctness of subdividing processes into natural and artificial ones. In this mode, the organic merges with the nonorganic, and the material with the nonmaterial, revealing in so doing their *technobiological or post-biological* character. Therefore, by introducing the notion of metabola — implying metabolization of the non-living, transformability with preservation of severalty, integration on the basis of differentiation — we deliberately emphasize the existing proportions of ambiguity, thus upbuilding a methodology of artistic investigation in probability terms. This is just the way to enable thematization of a new art medium obtained with the help of advanced technologies that have nothing in common with the processes of life except that those technologies have appeared through the methods that life itself avails of.

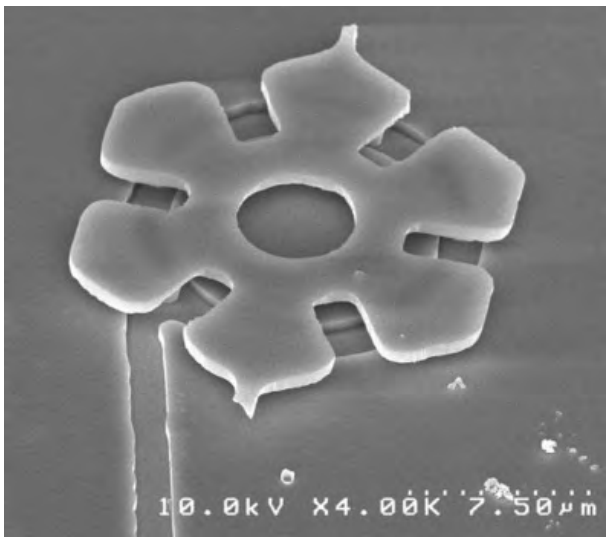

Image 2: Structural compression of non-organic matter: formation of various forms of the inanimate (Bacterial motor).

A probabilistic approach in exploration of the nanoterritories, which are different and at the same time welded together by the nonorganic life problematics, demands for establishing thought processes lying outside of the dichotomy of single/multiple, biologicity/technologicity, etc. In this regard we are yet to learn to perceive a new media carrier of information "in flux". It means that, when viewed through the prism of metabolas, technobiological creations occupying a mid-position in the classification of biological and abiological nature's production, the differences between authenticity and counterfeitness, reality and virtuality will now bear *the character of temporal distributions* and be solely dependent on us.

Such "pulsatile" type of new medium existence implies multidimensionality and interdisciplinarity of artistic approaches to its research that were virtually impossible before, in the context of previous stages of art history. Here are some of these approaches:

Interaction *with the living as with the technical* (variability) allows for a considerable increase in evolutionary speed of metabolas at the expense of informational selection, which prescribes documenting of self-reproduction information with its further conversion into a program. Let us note a special role allocated to analysis of a document as a most important characteristic of metabola technical component. Indeed, it is the document that makes it possible to replicate technobiological creations as species, setting up a link between a singular metabola and technical documentation. "Coevolutionary" effectiveness of this approach is today well-illustrated by scientific research carried out on the basis of organics and synthetics symbiosis. However, against a background of impressive achievements in this field, art has yet to find an answer to the question: "What kind of relations are ruled out, or will be ruled out in the future, given further implementation of this adjacency concept?"

Work *with the technical as with the living* (lifelikeness). Recently, the study of lifelikeness in the field of nanotechnology has been ever more tightly associated with dispersion modeling. In this case the research of new media carrier is transferred from the level of discrete object to the phenomenon of *amorphous but "coordinated" matter*. The nature presents us with samples of such self-organization by the example of the so-called swarming insects or groups of animals (flocks, herds, etc.) possessing the effect of distributed knowledge. And if the main task of science in this instance still lies with the issues of operational coercion when encoding such knowledge, performing distributive control, etc., the art is rather preoccupied with operational paradoxes — haziness of preset encodings, anonymity, and lack of control over the "controlling" authority itself.

Finally, it is the *interpretation work* (involvement), consisting in embedding of technobiological entity into a certain social construction. In essence, science and art are both assigned the task of synchronizing the systems with different timing. The point is that the stage of technobiological creations' socialization can be defined as a degree of innovation emergence within a system (thermodynamical time according to Ilya Prigogine). This kind of time is a synonym of motion, development and appearance of anything new whatsoever. This time inevitably comes into conflict with the physical time. As John A. Wheeler's put it, physics defines time so that motion looks simple. These two times — thermodynamical (innovative) and mechanical (calendarian) — are inequivalent and extremely difficult to synchronize. There is no knowing today as to how exactly the contention between the two will manifest itself; we can feel confident though in saying that, by and large, a unified system will prove troublesome: the times cannot coexist amicably.

The basic law of technology, which has been repeatedly uttered by the philosophy and sociology of the 20th century, says that each new technical advance considered by itself appears to be desirable, while technological process as a whole continually narrows the common sphere of freedom. Thus, representation of the progress as a choice between the old and the new that man makes in consequence of interaction between deed and doubt (which is, in fact, the gist of freedom of development) does not imply that making this step will remain a voluntary act in the future. Therefore, I believe that the main task of the Artist working in the nanotechnology field — in the territory of overwhelming possibilities that the nonorganic life presents us with — is engineering of the living future (i.e. the one investing the man with freedom) as opposed to the lifeless mechanical future, which is built somehow or other without our involvement.

On Brains and Urbanism
Reflections on Space, Neurons and Cities Inspired by the Projects "Ways of Neuron"* and "2 Cycles"**

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> *"Steven Johnson coined the somewhat more precise term "interface culture". The latter term is of particular interest because the world always shows itself through the interface. The interface is a semantic generating surface (in an abstract sense) of a medium."*[1]
> Hans H. Diebner.

On Brains

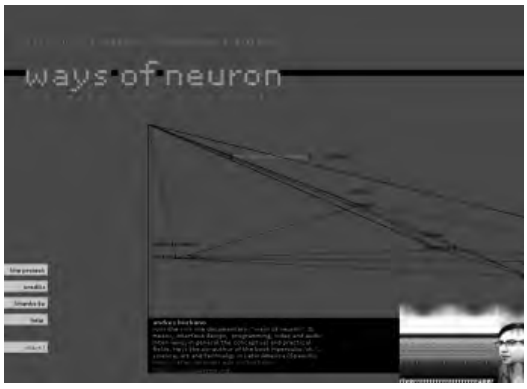
There is a common expression that addresses the delicate distribution of the different cortices, areas and cells on the brain as "Architecture". Keeping in mind the enormous complexity, diversity and richness of the brain structure I prefer to use the metaphor of "Urbanism" to achieve a better understanding of the brain structure. Since the last decades of the XIX century with the rise of Phrenology and the production of images associated with that predecessor of Neurosciences, it is possible to find some formal coincidences between the division of specific areas of the head with the city map and its divisions.

When I had the opportunity to do interviews with prestigious specialists and researchers about Neurosciences for the project "Ways of Neuron" — a prototype for an on line scientific documentary — I used to try to visualize in my mind the structure of the brain. In almost every case I got mental representations of systems which could be compared with the traffic of a large city, the electrical power distribution in a metropolis or the water systems of the Inca Empire. That was a useful way for me to imagine the large and complex series of connections on the brain (complex understood as the opposite of isolated not as the opposite of simple).

Later on, I discovered Steven Johnson's book "Emergence: The connected lives of ants, brains, cities and software".[2] Johnson had studied in detail the hidden connections of the evolution of these biological and cultural productions, finding the complexity as the crucial concept for the understanding of these diverse phenomena. Emergence that is a property of complex systems and it is the key point of the aforementioned book.

In my opinion there are connections between the structure of the brain and the macro structures of a city. However more than formal coincidences, there are interesting similarities in the nature of processes that characterize both of them. For instance in brains and in cities some places have well defined borders and there are well known functions associated to these regions. Nevertheless there are also another processes that seems to be mysterious. Although cities as brains have regions which vibrate synchronically and this does not appear to respond to an obvious connection. It is possible to realize then that in these rich and complex systems everything is somehow interconnected and the vibrations and rhythm of every single neuron, or person could reflect and transform other remote spaces.

Ways of Neuron - 2004



"Ways of Neuron" — an online scientific documentary — 2004/2008

"Ways of Neuron" is an on-line scientific and experimental documentary about the impact of Neuroscience research in the comprehension of the mind's nature. A critical aspect of the project is, from an aesthetic point of view, the coherent relationship between data processing and content access.

The documentary is informative while using professional and respectful sources of research and information in order to provide the necessary depth of content bound to these scientific fields; it is based on three types of materials: interviews with specialists, interactive experiences and audiovisual material. The project covers twelve general conceptual axes: Brain, Cognition, Consciousness, Emotion, Evolution, Imaging, Language, Memory, Mind, Neural Networks, Neuron, Perception.

"Ways of Neuron" was made with the special collaboration and support of PhD. Hans H. Diebner in the Basic Research Laboratory at the ZKM, Karlsruhe, Germany.

2 Cycles — 2008

"2 Cycles" is a *performative* project that works on — at least — to bicycles in motion, every bicycle has a laptop computer. "2 Cycles" explores physical motion, mobile Wi Fi network behavior, MAX/MSP and PD software, UDP and Open Sound Control messages and audio synthesis. The laptops also have Wiring I/O boards used to read input data from potentiometers to add some real time gesture to the performance. The stream of data shared between the laptops is sonified and amplified in real time. As soon as the data stream goes from one laptop to the other it is translated into noise music that certainly get the attention of pedestrians and another cyclists starting processes of human interaction.

Nowadays with the idea to integrate more elements and expand the project possibilities I decide to include, among other things, a GPS to track geo-spacial information of the bicycles motion. Therefore it is possible to trace trajectories, drifts, movements. In this new step "2 Cycles" project is exploring different levels of the cities, doing wardriving for instance, visualizing the shapes of Wi Fi networks around specific urban places.

The data collected with the input of "2 Cycles" is also processed in different ways later on; however the most important thing of the project is the mutual interconnection between the two bicycles that have completely independent movement, but despite that condition and the fact that they can be separated even more than 50 meters, they are still sending and receiving messages between them as if they were two neurons creating synapses exploring the complexity of the urban space.

This project is currently developed at the University of California Santa Barbara and it is based on the Berebere*** project by Gabriel Zea, Camilo Martínez and Alejandro Duque.

Conclusion

Having the first ideas on the one hand and on the other hand the two projects, I started to think seriously in a problem. If one could point out possible parallels and similarities between the structure, connections and functions of neurons and citizens, there should also be a way to think about the outcome of the interaction of these interactions.

In other words, the most important aspect of the brain is not its structure, it is what it produces: the mind, the consciousness. There is an important lesson here to be learned, the most important thing of a city are not its divisions, its buildings, its neighborhoods or its traffic, the most important and mysterious thing of a city is what it produces. It is not easy to find a word, but I guess what a city produces is an Ecology, to put it in a more accurate way, what the interaction of structures, relationships and processes generate in a city is an Artificial Ecology.

One of the most challenging compromises for media arts, activism, design, urban planning and architecture, is to create tools that can help us to destroy-construct a new relationship with such Artificial Ecosystems, to be practitioners of a new urbanism understood as the "the lifestyle of city dwellers".[3]

Notes

The seed of this text was written for the Beijing Architectural Biennial 2006 catalog. The adjunct curator of the Biennial, Mr. Lucca Zordan, commissioned it. Mr. Zordan was searching for particular projects and texts that could be useful for understanding of the dynamics of contemporary cities even if they don't come from the architectural field.

* Ways of Neuron: http://burbane.org/neurona

** 2 Cycles: http://www.burbane.org/html/mat_200B_02/

*** Berebere: http://berebere.info

1 Diebner, Hans H. 2006. *Performative Sciences and Beyond*. Wien.

2 Johnson, Steven. 2001. *Emergence: The connected lives of ants, brains, cities and software*. New York.

3 Apple Computer Inc. *Oxford America English Dictionary*. Entry for "Urbanism".

Virtual Borders and Surveillance in the Digital Age: Visit-US

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Introduction

Several recent developments concerning technology and humankind have changed the way borders are being designed. In this paper, I have categorized what I see as the three major tiers of developments: global monitoring, ubiquitous computing technology and the pervasive use of biometrics to create virtual borders.

Tier I: Global monitoring

Nations have been active in monitoring global communications for some time, but Echelon is the most comprehensive system that has been exposed to the world's citizenry. Echelon is a global network of listening stations and satellites that monitors all forms of electronic communications that cross borders: land and cellular phone calls, faxes, e-mail and radio signals are monitored, recorded and cross-referenced as they move through and across international borders.

Echelon was forged by a clandestine Anglo-alliance between the United States, Canada, Australia, New Zealand and Britain in 1948. Initially, the program was an agreement between the US and Britain to operate sensitive listening posts that were capable of monitoring international communications. By allowing Canada, Australia and New Zealand into the program, the US and Britain were able to cast a very wide net; Echelon was capable of picking up and monitoring worldwide communications from Europe, Africa, Asia, Australia, North America and South America. As part of the program, each of the Echelon member's intelligence agencies were charged with monitoring and gathering global communications (Port and Resch 1999: 10-11).

In 1999, the Echelon program began gaining critical media attention. On 31 May 1999, *Business Week* published an article describing the history and direction of Echelon's surveillance. Comparing the program to the arrival of Big Brother, the article explained how supercomputers are capable of monitoring global communications, automatically filtering individuals' communications, and listening for keywords. If certain strings of keywords are picked up, the data is sent to human analysts for further review (Port and Resch 1999: 10-11). There was also media concern about the United States using Echelon for purposes other than security. *The Houston Chronicle* detailed a European probe of the United States' use of the Echelon program. European parliamentarians charged that the United States was using the Echelon program to help American companies compete unfairly in international competition for commercial contracts (Pasqua 2000: 18).

These articles indicated a shift from the US government's physical control and physical monitoring of individuals to its virtual control and surveillance of individuals. In the classic Foucauldian model of control and discipline, if someone or some entity needed access to an individual's communications, a human, localized, physical authority such as a judge could grant permission vis-à-vis a search warrant for a physical inspection of the individual's physical communications records in a physical location (Foucault 1977: 77-78). When the US and its allies adopted the Echelon program, there was a shift to the virtual control and monitoring of individuals. With the use of listening posts, satellites, digital networks and supercomputers to monitor phone calls and emails. The old model of local physical controls over individuals' communications within and outside of physical borders broke down and was replaced by a digital decentralized apparatus of control that transcended physical borders.

Tier II: Ubiquitous computing technology

A second area of note involves GPS chipsets and WIFI technology. Some governments' justification for the mandatory installation of GPS chipsets in cell phones is that this technology allows emergency and police teams to monitor and track down a subject's location more easily (World Press Review 1999). Again, a noticeable shift away from controlling an individual's static, physical address to controlling and monitoring an individual's mobile dynamic address through the use of digital technologies.

In fact, there may come a time when an individual is no longer seen as a fixed target within his postal code's physical border. With the pervasive use of GPS and WIFI technologies, people may find that shops they pass will send electronic promotions to their cell phones or PDAs to lure them into these shops' interior borders. One of the best illustrations of this is the scene in *Minority Report* (2002) where a number of storefronts directly market to the main character, Officer Anderton, as his physical location shifts in real time. Officer Anderton is tracked, targeted and solicited by biometric scanners that read his eyes. The same type of system could be applied to an individual driving his car within and across physical and virtual borders. More and more new cars are being bundled with pre-installed GPS or satellite technologies such as OnStar and satellite radio. With these technologies, both cars and their drivers can be monitored.

With the technology described above, individuals could still opt out of owning cell phones or installing the latest technological gizmos on their PDAs or their cars. It is the technological component in their consumer items that are being tracked across physical and virtual borders. The individual in his organic form is less relevant. He is just the transportation mechanism for a digital, ubiquitous transmission and tracking system.

Tier III: Biometrics and virtual borders

Currently, there is another shift underway in how people are being monitored and controlled as they move within and across borders. This shift is away from using external identifiers such as cellular phones and vehicles to using almost invisible, localized, organic biometric identifiers. The US Department of Homeland Security (USDHS 2004) defines biometrics as measurable physical characteristics 'used to recognize the identity or verify the claimed identity of an enrollee. Among the features that can be measured are face, finger scans, hand geometry, handwriting, iris, retina, vein, and voice'. It is this emerging area of research and development that will have the most pervasive and profound impact on the future of personal information and personal movement; it is where the organic and the virtual will collide in a seamless manner. Ultimately, I envision a ubiquitous, seamless model of surveillance and control that extends beyond physical borders.

The most recent and large-scale example of this effort to monitor and control individuals' movements within and across borders using biometric identifiers is called the US-Visit program. Since January 2004, US-Visit entry procedures were operational at 115 airports and 14 seaports (Department of Homeland Security 2004). The US-Visit program is not restricted to US soil. According to the USDHS (2004), US-Visit is a security program that is initiated overseas when a person applies for a visa to travel to the United States. This security program 'continues on through entry and exit at US airports and seaports and eventually, at land border crossings'. The USDHS (2004) explains that the 'US-Visit program enhances the security of US citizens and visitors by matching the identity of visitors with their travel documents'. According to the USDHS (2004), this security program 'facilitates legitimate travel and trade by leveraging technology and the evolving use of biometrics to expedite processing' at US borders. Overseas US consular offices take biometric data from visitors using digital finger-scans and photographs. This biometric data is checked against suspected terrorists before a visa can be issued. When a visitor arrives at a US border, that visitor's biometric information is collected again and matched against a database to verify the visa holder's identity (Department of Homeland Security 2004).

Since August 2007, US citizens applying for or renewing their passports have been issued e-passports that contain chips that store personal and biometric data. Older US passports without the chips will be valid until their expiry period (USDS 2008). These policy changes indicate a clear shift in US internal policy away from a disciplined society to a controlled society. In a disciplined society, US citizens would follow laws regarding presenting

documentation to enter and exit borders. However, the USDHS seems to want to shift away from a disciplined society towards a controlled society. US citizens who comply with biometric sampling (e-passports) will have their biometric data filtered through a controlled system allowing rapid border crossing via an apparatus of digital controls.

Who ultimately has access to the personal information being collected? The USDHS website reports that the system is available to appropriate US federal, state and local agencies. How far away are we from a system being used to profile, index, track and monitor citizens? In the past, the USDHS required that airlines and cruise companies report personal passengers' information to them. If this information is combined with individuals' credit card information, a complete profile becomes clear. Companies like Acxiom collect individuals' contact information, estimated incomes, home values, occupations, religions, shopping habits and keep records for TransUnion, one of the world's largest credit reporting agencies. All of this type of information has been shared with the US government since 9/11 (O' Harrow 2005: 36-37).

The tiers of surveillance developments described above range from government satellites, which monitor personal communications, to cell phones, which allow for the observation of an individual's physical location, to virtual border controls. Thinking of Orwell's *1984* (1977), one wonders whether such an all encompassing data gathering system could or would be used to profile, index and track citizens' movements both physically and virtually. How is it currently being used to track citizens' movements locally, globally, and dynamically? Is all of this technology and expense worth the loss of personal privacy? In the past, individuals were able to opt out of being monitored by living without cell phones, PDAs, accessing the Internet and purchasing the latest technological gizmos for their cars. Now they cannot. What are we going to do to avoid being monitored and controlled? Should we remove our eyes or stay home all day?

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Creative Research and Creative Practice: Bridging Histories

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The possibility for supporting creative practice as a form of research has received extensive consideration both among creative academic practitioners and research policy-makers. This has been driven by a number of factors, among them an organisational need to account for professional creative practice among and expanding academic staff whose work contained an exploratory and innovative component; and growth in postgraduate programmes in the creative sector requiring equivalents to the knowledge-transfer models that have structured postgraduate study in other fields (UKCGE, 2002).

Recent research policy developments, particularly national assessment exercises in the UK and the British Commonwealth, suggested homologies between creative practice investigations and traditional research (if not always their equivalence) and facilitated the entry of creative practitioners into a formal Research Science and Technology (RS&T) support system. However, as a number of commentators have noted, this has often been characterised by a dynamic where creative practitioners are on the back foot, attempting to justify their practice as being as rigorous as "real research." After more than a decade of these discussions, we can now see that there is the potential for creative practice to contribute far more to our understanding of research and innovation than simply being admitted inside an existing discussion about knowledge production. In a way, creative practices highlight fundamental areas of tension in dominant ways of thinking about knowledge, and these represent an opportunity to rethink the systems by which research is undertaken and supported.

Creativity within a University knowledge system

While creative practices' understanding of creativity might be of a different order to most disciplines, it is also true that creative practice disciplines have not yet developed sufficient reflexive understanding of their position within the academy that would allow us to make stronger claims for a distinctive kind of knowing that could be the basis for support from research institutions. As Kevin Hamilton (2007) astutely observes, the difference between traditional disciplines (which aim to give a comprehensive introduction to a field at undergraduate level) and creative disciplines such as art and design are significant when we look at the way art and design is actually taught:

> Curricula and pedagogy for art and design at the undergraduate and graduate levels widely varies, undergoes little inter-institutional examination or critique, and is often still regarded with suspicion by even young professors who doubt that art can really ever be taught. 'Hidden curricula' dominate and there is no shared understanding of the discipline in the way that exists in most other departments.

This is unsurprising considering the dominant model for knowledge acquisition and expression in creative disciplines rewards an entirely different approach from the careful, detailed contribution to knowledge common to traditional academic disciplines. For artists, for example, the professional environment requires artists to have their work described in the context of their own development and investigations rather than that of prior work in the field. Of course, genres and traditions are constantly referenced, but most artists would actively resist seeing their work as a minor contribution to a large sphere of knowledge. As one of the participants in the Fine Arts AHRC workshop suggested bluntly, "the humility required to be a researcher [is] a particular challenge to artists who might need a different outlook to succeed in professional life."(Rust et al., 2007: 98)

Distinguishing professional and research practice

One response to this is to identify and isolate the parts of creative practice which fit most clearly with a research paradigm as we traditionally understand it, and distinguish it clearly from professional practice by inaugurating a specific set of processes which are called "practice-based research".

There is a difference between the *feasibility* of evaluating creative practice as a form of research and the *desirability* of it. In particular, we would have to question the value of practice-based research which explicitly contributes something to a body of academic practice if measured in an accounting-type way or through rational falsifiability; where is not widely seen as a valuable example of art, design, music, or media in the most significant authentication bodies in these disciplines (the museum, market, or festival rather than the academy). In other words, is it possible to avoid an evaluation process that suppresses creative practices as we understand them?

This raises the question as to the nature of the creativity we would want to assess. As Macleod and Holdridge (2006: 6) note, the findings presented through art "are always a posteriori and thus, ill suited to the institution's pursuit of truth and prescribed outcomes. Meanings are made after the event, through the act of viewing or contemplation and by the artist initially." Most artists would be suspicious of any new investigations which contribute to the field in advance of the work being created.

Further, it is difficult to promote creativity in institutional contexts because extrinsic motivation results in decreased creativity where strong intrinsic motivation is not present. A consistent body of research indicates that expected evaluation, surveillance, reward, competition for prizes, or restricted choice in how to do an activity all have a negative impact on creativity (Amabile, 1990). Anyone involved in research assessment exercises such as the RAE will experience the tremendous difficulty involved in getting practitioners to undertake the seemingly innocuous (from the institution/bureaucrat's point of view) process of documenting and submitting research portfolios. An audit model is opposed to the very nature of creative work.

This is not to suggest that research assessment systems are incompatible with creative practice, it is simply to acknowledge that, as von Tunzelmann and Kraemer Mbula (von Tunzelmann and Mbula, 2003: 2) observe, "most countries still regard their [research assessment] systems as somewhat experimental […] the nature of changes introduced is a likely reflection of dissatisfaction about previous systems (or indeed the previous absence of systems)." The systems are still far from settled, and while there is an ability for practitioners to intervene effectively, low institutional self-esteem is endemic in University art departments. As Timothy Emlyn-Jones (Emlyn-Jones, 2006: 237) notes:

> If, as a subject community, we are able to establish a shared understanding of how knowledge is generated through inquiry and communicated in or by works of art or design, then we should have grounds for confidence in our developing research culture since it is in the forms of knowledge that our subject differs from other subjects. In fact we have a great deal of knowledge about the knowledge basis of art and design, but much of our knowing about knowledge is anecdotal and undertheorised. This makes many of us apologetic for not being able to define the knowledge simply; this lack of confidence is unnecessary in my view.

When creativity is being adopted so widely in other fields and disciplines (Clough, 2005), questions around of application of innovation through practice are paramount (Calestous and Lee, 2005), and the development of tacit knowledge is increasingly valued both in academia and in the commercial sector, this seems like an ideal time to articulate the value of the creative sector in terms that make sense to itself, first of all, and to build environments that truly reflect what we know about how creative practice operates. From there, we can begin to investigate how the insights from creative practice can begin to address the demand for more reflexive, creative and applied knowledge.

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A study on the Alternative Artworks and Gallery Based on AR

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Introduction

This study and its works are for displaying alternative artwork through the augmented reality system. Most artists want to get results through the reactions of the spectators in their exhibition. Thus, the exhibition space is of utmost importance to them. But they must pay heavy costs and invest much labor for the installation of their works. So, we suggest that there be an alternative exhibition space for art works. We expect that these alternative forms might face various restrictions when there are complex configurations involving physical installation. However, we hope to represent more visual information than actual installation even though we incur lower expenses and use less labor.

Method and Implementation

The methods for implementation of the exhibition and artwork through AR can be divided into the 3D modeling for augmentation on screen, with suitable adaptation for the diverse features of the artwork, and configuration of the exhibition environment.

3D modeling is divided into plane work, solid work, and media installation. In plane work, we can render the plane image as orthogonal coordinates with patterns on the wall or the table and construct an environment similar to the real display. And we can render the image, play the movie as texture material, etc., responding to the user's eye direction. Both static and dynamic images can be rendered. The solid form can be shown through 3D modeling. We can show various images according to the viewer's angle by applying different materials to each side, using objects and animation. As we can include the text and sounds based on 3D within the image, the diverse effects of a display can be multiplied. We can install the work by configuring the space using a combination of patterns or by expanding various display devices.

These works are implemented through 3D modeling programs such as 3DS Max, MAYA etc. and applying the various algorithms such as OpenGL, DirectX, VRML etc. If it satisfies the phsical conditions, we can present more visual effects and simulate reality in the virtual environment. In particular, we can send represent more information in the work when we use human body animation throughout real-time interaction images as compared to using static images in the traditional method. Thus, we can deliver greater satisfaction to the audience who demand multi-level experiences.

We need an image acquisition camera, a display unit, and hardware such as a PC for implementing this display. As in previous experiments, we can view the installation by using the LCD panel plus the CCD camera. Also, the wall can be the marker while and the solid form uses the box and table. With these, we can configure the spaces in various forms, corresponding to the features of the work itself and responding to the viewer's taste.

The space configuration made by these methods is similar to the use of exhibition spaces in the traditional way. In the configuration suggested in this study, we construct the display environment using pattern images only and we can see the augmented work when we access the system and view the display unit. These configurations embed the units needed for system implementation within the exhibition spaces.

The art is made by representing the target or the existing condition. Also, this representation is elaborated through the use of metaphors and parables. (Figure 1)

Conclusion

Various materials can be used with advanced technology to decorate ordinary spaces as well as art spaces. But, the main target is always the human being and the results

Figure 1: Diverse display forms

must consider the human scale and the environment more actively.

In this study, we try to find the alternatives to overcome the constraints experienced in the use of traditional exhibition spaces. It is difficult for artists trying to represent various values to overcome these restrictions. We suggest that applying AR technology and using display space configuration can be viable alternatives. Unlike the existing display which only has one-sided delivery, the animation and sounds of 3D models can respond to the participant's operation, and the space configurations of various patterns can change the form of the display space. The form that the static image is changed into the visible message by the participant can be a major feature of the work itself. Of course, when using virtual medium, the work will be different when compared to using real material in traditional forms. However, the viewer can gain subjective sensitive information of the work's uniqueness through the

Figure 2: AR implementation as artworks

substituted multimedia delivery of direct and active information. Yet, we do not want to virtual technology to take over the artist's creation. The creators must be active in providing these values. The work can be performed through the viewer's the faithful understanding of the creator's intent at every moment. (Figure 2)

To install a more advanced display, we need to apply real-time materials in multiple forms based on photographs taken from life, and using hardware based on wireless, high resolution display, etc. This can increase real-time experience of the work through transformation of information and the lively use of space. If this study is enlarged, we can satisfy various display conditions for artists with different intentions to express, and suggest effective alternatives for people with diverse creative wills. We can always try to make the system helpful for creators who aspire to represent their own values.

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Reality Jamming: Beyond Complex Causality in Mediated Cultural Systems

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Introduction

It is clear through experience that there is some significant relationship between media representations and cultural effects. Yet as practice leads theory through the sheer velocity of technological change, experience outstrips theoretical understanding of the relationship between the sign and the signified, the simulation and the social, the model and the real. For example, the international crisis provoked by the publication of a cartoon of the prophet Mohammed as an unexpected result of networked global media; or the pre-*mediated* violence of the 'trenchcoat mafia', where signification was an *intentional* precursor to real effects; or the trajectory of 'celebrity', where the 'virtually real' is designed, acted out, consumed and fed back in a co-evolving eco-system of signification. The proliferation of digital media means it is increasingly important to understand *interaction* per se, especially the interaction between systems of signification and the real. This paper argues that all representational systems have a performative capacity for transformation of the real and that signification is a dynamic intermediate realm between the real and the conceptual which can be best understood as a realm of invocation.

Mediated Cultural Systems

Within a 'media' culture, lived experience qualifies some significant relationship between representations and cultural effects. We can, for example, observe that successful advertising campaigns increase sales, for example, the 'Coca Cola Oceana — a little wild' campaign promoted their 'rotational flavour' strategy and resulted in a significant market share growth 'in just four weeks'.[1] This type of promotional activity is well accounted for in the post structuralist approach of Media & Cultural Studies,[2] where effective analytical methodologies that are used to 'deconstruct'[3] existing cultural 'texts' are also successful design methodologies for commercial success in industry.[4] The same discourse also suggests that advertising campaigns create definable 'pseudo communities'[5] where one shares a sense of identity anchored around one's choice of products. Do you 'subscribe' to Coke or Pepsi; Volvo or Audi ? Are you a 'Marlborough Man'? Even an EEG machine[6] can detect ones exposure to 'putative branding moments within TV commercials'.[7]

Of course, sometimes, unpredictable behaviours emerge, such as the unexpected adoption of Kangol headwear by members of the US hip hop community in the 1980s: Run DMC were wearing the same wool beret as English Boy Scouts. Umberto Eco used the term 'aberrant decoding'[8] to describe such behaviour; where [an artefact] is 'decoded' by means of a different code from that used to 'encode' it. Stuart Hall suggested three positions for interpretation of cultural artefacts; 'dominant', 'negotiated' and 'oppositional'.[9] It is clear that free will plays a dynamic part in interpretive processes; we cannot define a deterministic 'cause and effect' between advertising and behaviour because human beings can make choices.

This notion of 'human agency'[10] is usually set out itself as an oppositional position to the determinism of the physical sciences, polarising the 'technological' (the advert) from the 'natural' (behaviour). This enforces an

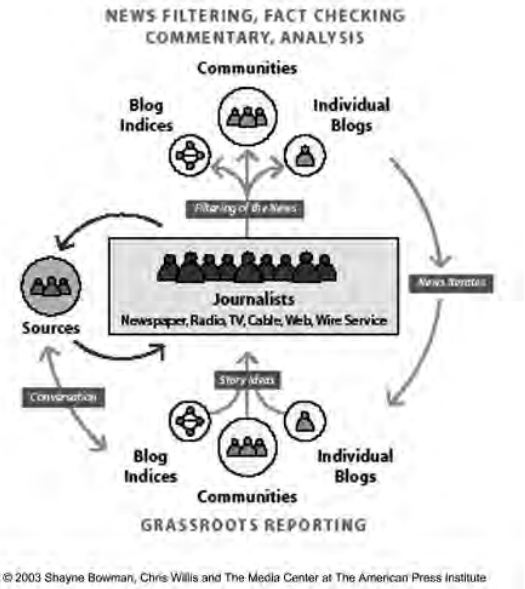

Figure 1: The emerging media eco-system

extreme dualism[11] that underpins the conceptual void we now struggle to fill as experience outstrips theoretical understanding of the relationship between the sign and the signified, the simulation and the social, the model and the real, as practice consistently leads theory through the sheer velocity of technological change.

Digital media is forcing our understanding of interactivity as 'the terms art, design and media converge into a process driven, performative event that demonstrates emergence through autopoietic processes';[12] as computerised communications technology accelerates Benjamin's 'photographic speech' to the speed of digital *discourse*[13] (Figure 1: The Emerging Media Eco System) Whilst the post-structuralist notions of 'the death of the author'[14] and the 'open text'[15] prefigures the processes of digital interaction to an extent, the void is the *relationship* between polarized conceptual constraints inherited from Rene Descartes.[16] We struggle to understand the *interaction* between the conceptual (non material) and the physical (material).

Complex Causality

'Systems thinking' is a dialectical method that breaks with logical analyses to emphasize relationships and interactions. It can be traced from Socrates through Hegel to pragmatics[17] and is applied as a trans-disciplinary methodology.[18] It is a way of thinking rather than a specific set of rules, and has given rise to 'complex systems theory' for systems that demonstrate specific capacities of 'complexity' such as 'self organization' and 'emergence'.[19] For our purpose here, "complex systems" are systems that are diverse and made up of multiple interdependent elements, that are often 'adaptive', in that they have the capacity to change and learn from... and can be understood as emerging from the interaction of autonomous agents — especially people.[20]

This concern with relationships and interaction, systems and complexity, has run concurrent to the computer age and some degree of technologically deterministic 'medium theory'[21] has to be acknowledged. The parallels between digital media and complex systems have not gone unnoticed. Indeed the notion of the 'networked society' is not new either.[22] In his 2006 paper, Lars Qvortup describes the internet itself as a 'complexity machine' and described the international crisis provoked by the publication of a cartoon of the prophet Mohammed, as a 'communications event'.[23]

Whilst it was clearly an emergent property of the complex system of networked global media, the pre-*mediated* violence of the 'trenchcoat mafia', who carried out the Columbine High School massacre, demonstrated representation as a direct and intentional precursor to real effects. For the perpetrators, the value of the virtual reality of signification were understood as greater than the value of the physically enactive domain. This is intentional rather than 'emergent' behaviour and raises questions about their intuitive understanding of the 'kinship' of representation to the real. For example, in the sciences, representation is conventionally referential, used for 'tagging' elements of an external reality; whilst for the humanist, representation is an ideological construct through which a sense of reality is defined. It appears the 'trenchcoat mafia' understood themselves purely as part of a representational system and designed and acted out their own 'communications event' using themselves as part of the signification process; reality jamming indeed.

Figure 2: People as co-evolving media products

The trajectory of 'celebrity' too demonstrates a dubious type of 'communications event' with a 'feedback loop' between the real and the representational. Here, the signification is designed, acted out, consumed and fed back in a co-evolving eco system of signification. How can we realistically describe a type of causal representational system where the 'celebrity', whether semiotic, metaphoric or simulated, seems to eventually become their own avatar, often suffering an extreme, sometimes literal, loss of self? (Figure 2: People as Co-evolving Media Products) Whilst it is important not to confuse the meaning of useful new terms for addressing digital media phenomena it is also important to acknowledge how the virtual presences of systems of significations, that we are only just beginning to be able to describe, interact with enactive reality.

The recent work of Ira Livingston sets out the notion of an 'autopoiesis' or 'self-making' capacity for language based systems; a concept originated in the biological sciences[24] and later expounded into social systems.[25]

Livingstons 'autopoetics' or 'the convergence of words and things' is based on the proposition that language is 'of the world, like galaxies and ecosystems…it participates in what it represents'.[26] Does this mean that language shows true complex systems behaviour through a complex interaction not just with itself but with the environment?

Reality Jamming

Whilst post-structuralism prefigures the processes of digital interaction to an extent, a complex notion of language systems accounts for emergent *behaviours* rather than simply emergent *interpretations*. This immediately crosses the Cartesian void between signification and the real. Furthermore, it appears that some type of autopoiesis is at play here *across* that void; not only that language systems and behaviour patterns are complex systems themselves, and part of the complex *nested* system of culture in dynamic, *interactive* relation, but that they are equally 'real'.

In this realm of autopoetics, signification is best understood as a dynamic intermediate realm between the real and the conceptual; an *interactive* interface to the real, which can best be understood as a realm of invocation. In this light, all representational systems have a performative capacity for transformation of the real as they are *played out in use*. A notion that, if fully understood, might mean the western press would not have published a cartoon of the Prophet Mohammed in the first place.

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1 Anon, 'Coca Cola Oceania - a little wild', Case Study, World Advertising Research Centre, www.warc.com accessed 28th April 2008

2 Thwaites, T. 1994. *Tools For Cultural Studies*. Macmillan, p. 67.

3 Barthes, R. 1968. *Mythologies*. Paladin.

4 Alexander. M. 1995. "BIG TALK, small talk; BT takes a look at British telephone culture" In *Marketing Research Society Annual Conference.*

5 Cubitt, S. 2001. *Simulation & Social Theory*. Sage, p. 40.

6 Electroencephalography (EEG) - the measurement of electrical activity produced by the brain as recorded from electrodes placed on the scalp

7 Braeutigam, S. 2004. "Neuroeconomics-From neural systems to economic behaviour." In *Brain Research Bulletin* 67 (5), 15 November, pp. 355-360

8 Eco, U. 1965. *Towards a Semiotic Enquiry into the Television Message*, Corner & Hawthorn (Eds.) (1980), pp. 131-50.

9 Hall, Stuart. 1973. "Encoding/decoding." In *Centre for Contemporary Cultural Studies (Ed.): Culture, Media, Language: Working Papers in Cultural Studies*, 1972-79. London: Hutchinson, pp. 128-38.

10 Williams, R. 1980. *Problems in Materialism & Culture*. Verso.

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Drawn: The Artist, Audience and Interactivity

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Abstract

New media technologies are expanding the range of possibilities for digital media design. Interactivity has been seen as one of the most dynamic features in new media technologies, especially for those new media artists who endeavour to explore the capacity of digital media technology. This paper aims to highlight the important relationship between the digital media artist, audience and the digital media work, by analysis of the audience's reaction to a digital media work. Giving adequate consideration to how the audience might comprehend a digital media work helps to ensure optimal setting for interactive media design. In addition, this paper suggests the importance that the audience understands interactivity has been used to achieve an immersive creative experience, and it is vital for the artist to appreciate the extent of the audience's understanding of the use of technology in their work. This paper discusses the relationship between the artist, audience and digital media work by evaluating an interactive media work, *Drawn Installation*.

Introduction

While information technology is currently based around technical rationality and the efficiency and effectiveness of content delivery, increasingly it impacts all aspects of our lives, including our sensory and emotional experiences and the parameters of our imagination. As such, interactive design should not simply cater to factors like base level cognitive processing but the affective and creative centres of the brain.

Interactive digital art works involve new forms of live interactivity and performance, especially those of particularly experimental nature which are difficult to understand or critique for most audiences. Even though what constitutes the 'audience' today is more ambiguous than in earlier times, one might consider the audience as an element of artists in their own right, some simply less familiar with the concept or use of digital technology. The *Drawn Installation*, the subject of this analysis, raised the question of how and to what extent the audience experiences and interpreted the thematic elements: interactive live performance of hand and ink.

The Work

The *Drawn Installation* was made in 2005 by new media artist Zachary Lieberman in America. Lieberman's work uses new media technology in a playful and mysterious way to explore the nature of communication and the boundary between the visual and invisible. *Drawn* uses computer vision techniques to allow users to paint with ink on a canvas, and then transfer the resulting drawing on to a computer screen where it becomes alive through computer intervention. Ink stains are erased from the page and are free to move around the screen in reaction to user interaction.

Drawn is an ideal example of "augmented reality" used to create a poetic space between the real and the virtual, throwing in plenty of playfulness and generosity. *Drawn* provides an intuitive media interface, and the projected results become both a work stage for the user and a performing space for observers. The sketches left behind by users were displayed on the walls in the gallery as a document both of the artist's and of the users intention becoming a charming side product of the interactive installation. (Figure1) However, *Drawn* is concerned

Figure 1: A visitor exploring the *drawn installation*

with interactivity, applying complicated technological solutions to the creation of playful and poetic spaces.

Interactivity in the Context of Digital Media

Interactivity is a broad term that carries a number of meanings. One of the most sought after goals in the digital age is that the user can actively manipulate the media and the information, thereby eliciting a 'high' level of interactivity. The idea of high-level interaction implies that the user can initiate actions in a digital media context. These moments of interaction define the texture of each individual multimedia experience. Internet and new media consultant Tony Feldman suggests that interactivity offers the potential to create a new era in information, entertainment and education. Through interactivity, once dull, passive experiences will be transformed into something infinitely richer and more compelling. Feldman's utopian enthusiasm for new technology imagines its potential to produce new levels of human experience, far surpassing the singular consumption of information in older media forms. However, new technology is not in itself transformative in the ways Feldman suggests. Enhanced user experience of media and information depends on how the new media technology is applied to the content, and how interactivity is developed.

The notion that the user is an active participant in the context of new media gives rise to the idea that users are potential co-creators through their power to interpret new media content, their engagement potentially extending to the construction of meaning. Interactivity extends the creative dimension, and enhances the action that defines the texture of a specific reading behaviour. It suggests that when individuals participate in a communication process, the roles of sender and receiver are in some ways interchangeable. Such an understanding encourages new media artists to act on the user's receptivity. Interactive art represents one of the highest levels of interactivity between users and new media. As an ideological imperative, interactive art involves a direct exchange between the artist or designer, the digital work, and its audience, emphasizing and stimulating the creativity of the spectator.

Conclusions

Lev Manovich argues that the new media object is not fixed but something variable can exist in different, potentially infinite versions. Recognition of the character of user authority shifts the focus from the simple idea of interactivity to the user's ability to manipulate material as presented, to specifically facilitate the production of individualized meanings and experiences. Interactive systems require the user to react. As technology expands, more variations of possibilities will become available, not only between the user and the system but among the content within the system. Eventually, computer interface systems will most likely reflect the personality of the user.

In a digital media environment, *Drawn* encourages the user to explore the creation of their work; the potential of digital technology could possibly be the integration of both content and technology with an individual personality. However, in *Drawn* the capacity for participation allows an individual to construct the content that differentiates the individual from a passive controller to being active with a sense of personal identity and able to give thoughts and desires and offer creativity. From this basis, giving adequate consideration to how the audience might comprehend a digital media work helps to make sure optimal setting for interactive media design. In addition, it is essential for the artist to appreciate the extent of the audience's understanding of the use of technology in their work.

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Investigating New Models of Communication as a Spatial Practice through the Implementation of a Locative Media System

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Introduction

The integration of wireless media, tracking and mapping technologies and the impact of their use on mediated communication within urban public space is one of the primary concerns of theoretical research on the subject of Locative Media. Locative media are systems of technologically mediated interpersonal and group communication. By introducing context awareness and by supporting multi-user communication, these ICT systems alter the situation within which mediated communication takes place, thus bringing to light new spatial contexts and affording new types of experiences where social interaction may occur and novel forms of cultural practices may emerge.

The potential for supporting real social interactions among mobile individuals along with the unique "hybrid" spatial character of the experience afforded by the use of these ICT systems challenge the traditional ways in which we perceive and interact with the "physical" inhabited world. Mobile, wearable, devices could nowadays be networked, internet enabled and location aware. As a result, mobile users holding these devices could be easily positioned and their surrounding, concrete environmental elements in the physical world can be tagged as well as mapped onto appropriately designed environmental representations. By affording location detection of each user, multi-user locative media systems may allow groups of such users to interact with each other, while being aware of each other's location at all times, thus triggering social experiences and a range of "latent" geospatial activities, in an existential, inhabited, "lived" physical space.

Locative media and the hybridisation of urban space

To city dwellers, the urban context is not merely a geographical term. Depending on a dweller's preferences, experience, and daily routines, parts of urban space will be perceived as socially significant, as people attach meaning to them and appropriate them. Attribution of meaning, appropriation, and regular occupation of spaces may lead to their transformation to places (Dourish, 2001). The concepts of space and place are not identical. Space refers to the spatial arrangement of elements which establishes an environment, whereas place has more social connotations and is not exclusively confined to the material world. Regular occupation and appropriation of a space are essential for the transformation of spaces to places. In addition to the social significance attributed to spaces in this fashion, locative media superimpose a layer of digital information over the urban landscape. Thus, physical space is enhanced, and at the same time the layer of digital information is mapped onto it. The result is an effective combination of the digital layer's fluidity and the durability and permanence of real space (McCullough, 2004).

In summary, the nature of urban space as a stage for computer-mediated activity and communication is threefold: geographical (arrangement of physical space); social (the concept of place); and digital (the layer of digital information). Public space that becomes 'mediatised' (i.e. that successfully integrates digital media with the physical environment) and imbued with social significance may give rise to new forms of social activity, as in the case of pervasive games, social networking, etc.

The LOCUNET project

LOCUNET (LOCation-based Urban NETwork) is a research project that aims to investigate the social and communicational aspects of using such multi-user location-aware systems in an everyday urban context. The aim of this project is to develop a theoretical framework which describes locative media use at various levels (personal communication, interpersonal mediated communication, inter-group communication). This framework ultimately aims to inform the design of locative media. For the purposes of evaluating this framework, a location-based pervasive game activity has been designed and implemented. This activity will engage a number of mobile and desktop users and will take place in central Athens, Greece in May 2008.

The LOCUNET[1] project adopts an interdisciplinary approach in studying "novel" forms of intergroup communication and social relations which may occur within a locative media group context, focusing on the technical features and aspects of designing and implementing location-based systems, as well as on the social implications of using such systems in the everyday urban context. Its primary research objective is to study the way that users interact with other users (human-computer-human interaction aspect) and with the location-based system itself (human-computer interaction aspect), while focusing on the physical and social context in which this interaction takes place.

From this angle, LOCUNET attempts to explore to what extent a location based activity can modify group interaction and communication, as well as on the way members of such groups manage to perform a joint task relying, at the same time, on spatial information to coordinate themselves. The main outcome of the conducted research is to present a conceptual framework by which to examine the engaged innovative technologies and their potential social impacts, perceiving locative media systems as "mixed-dialectic experiences" conjoining two seemingly opposite concepts:

- the physical environment of the real world and
- the "virtual" environmental context of the digital information and communication layer, which is mapped onto physical space and is supported by the locative media system.

Research issues addressed by LOCUNET

LOCUNET aims to investigate certain issues related to inter-group relations and group formation, and the relationship between individuals and the environment in the context of locative media. A primary research objective is to investigate whether locative media support the relationship between group members, and how effectively they do so. More precisely, our research will attempt to provide answers to the following questions:

- What is the role of locative media users as members of mediated groups? Are users indeed "agents" and is, accordingly, locative media use a form of social action?
- How do factors such as real or virtual environmental elements influence the generation of social meaning on the part of the communicating users?
- How do users cope with the hybrid nature of such spaces? To what extent does real space become a vital part of a location-aware device's interface?
- How does the configuration of such hybrid spaces affect the course of user activity?

In order to achieve the above objectives, LOCUNET adopts a methodological approach that includes both quantitative and in-depth qualitative research, for the purpose of evaluating the system and users' attitudes towards locative media. Quantitative methods include questionnaires and system logs, while qualitative approaches include observation, interviews and focus groups [Diamantaki, et al., 2007 and Hare & Bales, 1963].

Furthermore, we attempt to determine whether and in which way mobile locative media contribute to the constitution of what we call "social world", a hybrid and synthetic formation that is constituted by non-homogeneous correlations of human and non-human entities. The answers to these questions are expected to provide a valuable theoretical grounding for the processes of developing locative media and investigating their use as an act of communication.

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1 The research project titled LOCUNET is supported by the Greek General Secretariat of Research and Technology under the framework of the Program PEP Attikis, 1.2. and is part-financed in percentage 70% by the European Union-European Regional Development Fund.

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RENATI
Recontextualizing Narratives for Tangible Interfaces

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RENATI

RENATI is an acronym for recontextualizing narratives for tangible interfaces. It serves as an umbrella term for our artistic experiments within a hybrid environment that uses various forms of narratives, such as oral narratives, diaries, essays, screenplays, and non-generative and immersive art with sensing technologies, to create tangible narratives. The roots of RENATI are in oral storytelling and filmmaking. We have been inspired by the growing interest in oral narratives and their convergence with digital technologies such as the growing use of mobile phones, the significant number of oral narratives housed in public and grassroots community institutions, the use of digital technologies by ministers of mega churches worldwide, and the weaving of spoken words into various forms of digital media by international hip-hop artists. The explosion of documentary films, both commercial and non-commercial, and the use of digital cameras as tools for activism have also inspired us.

RENATI connects one of the oldest forms of communication, the spoken word, with one of the newest forms of communication, tangible interface technologies. It is part of a tradition of placing stories into physical embodiments to explore the sensing and manipulation skills that are a natural part of human interactions. Our artistic motivations grew out of our cultural and political motivations that include using technology to give voice and visibility to marginalized, submerged and suppressed voices. RENATI is designed to have participants engage with stories (and thereby points of view) that they might not consider if presented in more traditional artifacts such as text, broadcast television or long-form cinema.

To create tangible narratives, we interconnect three environments: narratives (personal experience narratives, creative stories), digital narratives (digitally recorded narratives), physical narratives (installation art). While tangible narratives can be considered a branch of interactive installation, adding the ability to access information specifically through tangible manipulation defines a new category. Generally, this type of work cannot exist if the participant does not "do" something with something, i.e. it is through some form of touching of a physical artifact that participants access or construct information.

The story space

Flying Over Purgatory

Flying Over Purgatory is the name of the first prototype for the RENATI project. The narratives that we constructed are based on an original screenplay by Ayoka Chenzira that is set in South Africa. The screenplay incorporates reworked testimonies from transcripts of people who testified before the Truth and Reconciliation Commission (TRC), as well as oral narratives that Chenzira collected while working in South Africa as a filmmaker and a teacher for emerging film directors and screenwriters. In our version, four characters each share multiple viewpoints of their experiences of living under Apartheid: *Sienna*, an African-American woman working with a community organization that prepares survivors of Apartheid violence to testify before the TRC; *Mrs. Modjadji*, an elderly woman whom Sienna is preparing to testify, who witnessed the murder of her family by a policeman, but refuses to testify. She is mistrustful of the TRC process and fears reprisal; *John Mthetwa*, a former police officer who admits killing members of Mrs. Modjadji's family, but pleads that he was under orders that could not be refused and therefore should be granted amnesty; *Nombuyiselo*, fourteen year-

old granddaughter of Mrs. Modjadji who questions Sienna's interest in trying to get her grandmother to testify before the TRC.

Several recontextualizations take place in this work: the oral narratives and testimonies are reworked to appear as dialogue or reference material; both narratives are later dramatized by actors; moving tokens that are part of the installation determine the order of a character's presentation.

Figure 1

Implementation

Our system was created using an eight-foot custom-built stylized female sculpture made of wood that holds two monitors (Figure 1). At the base of the sculpture is a pressure sensitive mat that identifies when a participant is present. The mat is controlled by a simple circuit and a programmed microcontroller board. An acrylic hand, waist high to the torso, rests inside of a wooden pedestal. Strapped into the hidden wrist of the mannequin is a custom built RFID reader.

The software running on the computer is created in Max/MSP with the Jitter video/graphics library. Because the interaction between the user and the installation is moderately complex, we modeled our interactive narration with a state transition diagram and implemented a state machine in Max/MSP.

Crazy quilt sightings: surviving broken levees and Katrina

A crazy quilt is a quilt that is created by connecting random types of fabrics. Here we are extending the idea to the digital domain, by incorporating fabric and other three-dimensional objects with a tabletop fiducial marker-based computer vision tracking system called reacTIVision, developed by researchers at the Music Technology Group at the University of Pompeu Fabra in Barcelona, Spain (Kaltenbrunner & Bencina, 2007).

During the broken levees and hurricane Katrina in New Orleans, Louisiana (2005), nearly two thousand people lost their lives. The aftermath of the levees and the hurricane produced a crazy quilt arrangement throughout neighborhoods: cars were in trees, houses were on top of boats, personal documents and belongings floated down miles of damaged streets. *CrazyQuilt Sightings* is

Figure 2

designed to foreground the stories of Katrina survivors and witnesses within the context of a tangible and multi-touch interface where users can have a tactual dialogue with the installation by building their own crazyquilt as they move items into a position and trigger a connecting video clip that uses oral narratives, and visually interpreted diary entries, poems and essays.

CONCLUSION

We are in the early stages of experimenting with the transformation of various types of narratives into compelling tangible interactive experiences. In the future, we will be extending this work to provide a more deeply engaging experience with the narratives in question through a greater variety of tangible interactions. For example, with *Flying Over Purgatory*, by using additional boundary objects that have simultaneously existence in the story space and in the viewer's physical space, we believe we can create a closer connection to the story world for viewers. We suggest that our initial process might serve as practical and conceptual support for artists and other researchers interested in further study on tangible narratives.

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Illusion of Technology in the Human-Computer Interactive Art

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Introduction

Human-Computer Interactive Art suffers from an obsession that has led to bipolar discourses between negative and positive utopia. This discourse, provoked by insecurity in the face of technological advance, drives the illusion of technological superiority. We cannot escape from the illusion because of the structure of technology itself.

Enframing as the Subordinate Moments

There is no neutrality or value freedom of technology, since all technical practices involve both active and receptive aspects.[1] To integrate both aspects, Martin Heidegger used the puzzling meta-language that the technology is not the technology. The activity and receptivity of technology can be distinguished by the instrumental and ontological account. The former mainly considers each individual fulfilling his human desires, including cause and effect. The latter stresses more on the ensemble in social relations. The instrumental definition of technology is not wrong, yet it is not all true. It cannot explain the disagreement of the cause and effect, and so its promise has gone awry.

Heidegger demonstrates that the technology essentially has subordinate moments, and defines it with 'enframing (*Gestell*)' that a 'world' as a meaningful structure of experience is shaped by the provocative exigencies of technological planning and control. The enframing thrusts things into the ordering, setting-upon and challenging nature. It also moves the Human-Computer Interactive Art to busy instrumental circumstances, and makes it incline to one side, so-called the tendency of technological Determinism. It means that the Human-Computer Interactive Art is enframed as a part of stockpile of available materials and personnel, and always ready for technological purposes.

The Illusion as the Inversion

The enframing incurs the illusion that operates in concealment, or appears as something it is not. Karl Marx defines that the illusion indicates not the form but the 'inversion' which is originated from a social relation. He analyzed in detail a use-value and an exchange-value of commodity. As a use-value, the form of commodity does not have a mysterious character, and it exists simply as either the result of human labor, or as an object with specific use. As soon as it takes over an exchange-value in the social relation (like a market place), an enigmatic character arises in the form of a commodity. It is the illusion that conceals a direct relation between people, that a material relation between things takes on supernatural power as an idol or divine incarnation.

To explain the illusion, Marx referred to two metaphors of 'Camera Obscura' and 'Phantasmagoria'. The former compares the illusion with an upside-down image as in an optical device, and the latter reconsiders the phantasmagoria show that produced optical illusions as a form of popular entertainment in the nineteenth century. In 1867, *Capital* Volume 1., Marx described the illusion that "there is a definite social relation between men, that assumes, in their eyes, the fantastic form (*dies phantasmagorische form*) of a relation between things".[2] The optical metaphor reflects on the spirit of the age and has relevance to the aesthetic discussion of the Human-Computer Interactive Art, since it is an artistic model for the function of illusion like the deception of the consciousness and senses, the confusing of reality and fantasy.

Artistic Evocation of Illusion

The phantasmagoria was the art of optical illusion using technology to manipulate the light and dark. It was produced chiefly by means of the magic lantern in a darkened theater.[3] The darkened theater first appeared in

Richard Wagner's opera of Bayreuth at the nineteenth century. In the concept of total art (*Gesamtkunstwerk*), Wagner applies the illusion with the art that is caused by the arrangement of space for the spectators and the optic or acoustic faculties. The darkened auditorium accompanied by various visual and aural devices as well as lighting technology evoke unaccustomed and uncanny experiences. He believed that it led the audience to the universal of art whereby "the most *universal* is at that time the only real, free, the only universally *intelligible* Art-work".[4]

The Human-Computer Interactive Art is the heir of Wagner's project which frees the illusion by using technology to approach the essence of art. No doubt the essence of illusion as a false concept remains the same always, but the means of making the art an illusion are now much more powerful than the past. It even seems to get out of hand. This gap between the essence and means accelerates the illusion of technology. Human-Computer Interactive Art pertains to a false concept that the most advanced technology creates great work. Some artists sometimes find themselves not searching for an essence of art but following a fashion of technology. It is an illusion of the power of technology.

Demystification of the Illusion of Technology

The demystification of the illusion commands the self-affirmation. In practice, Rudolf Arnheim remarks a wider insight that "the stationary images allow us to explore the world in its being, while the transitory ones let us follow what takes place in sequence".[5] It is a belief that a significant art-work still exists as the epitome of human nature having an indispensable counterweight, and offers a store of lasting meaning, without which we would be helplessly exposed to the flight of transitory happenings.

As an ontological solution, Heidegger suggests the deconstruction of essence through the aesthetic meditation. He predicated that "if reflection on art does not shut its eyes to the constellation of truth after which we are questioning", we can witness a flash of it.[6] It reconciles the illusion of technology with a sign for capturing the essence, and implicates a way "to look at scientific enquiry from the perspective of the artist, but to look at from the perspective of life".[7] In the circle of art, technology, and life, what is needed is a practical thinking that sets out from our real life-process, and what has to be changed is not the technology but the illusion.

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1 The definition of technology, however, has been focused on an activity that is about technology in the usual sense of the term, i.e. devices and theirs uses. The receptive aspect reflects a mental attitude for the acceptance and adaptation of the facts including a withholding judgment until we receives it.

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3 The Magic lantern invented at the seventeenth century was an optical technology that consisted of a lamp and an arrangement of lenses to display images painted on glass.

4 Richard Wagner, 1993. *The Art-Work of Future and Other works*, translated by William Ashton Ellis. Lincoln: University of Nebraska Press, p.194.

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Post Appropriation

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Sean Snyder, *Analepsis* (still)

In artist Sean Synder's *Analepsis* (2003-04), a sequence of video snippets present alternating sweeping and zooming shots of various landscapes and settings. The work is made up of establishing shots taken from satellite news broadcasts (each lasting 1-4 seconds), yet devoid of sound, text, explanation. Rather, the spaces are de-territorialized and impenetrable. Shipping containers, compounds, apartment blocks, scrub and brush, cranes, an airport runway, guard towers, oil fields, mountain ranges, office grids; these views are offered impartially, as if in a film which seems to lead nowhere in particular (the widescreen format references both cinema and the obscuring of the rolling news feeds). This could be anywhere, or everywhere. As in his other works, which have utilized images acquired from news agencies such as Associated Press and Reuters, Snyder takes on the position of the critical observer, cataloguing and re-presenting extant imagery and information as his own. However, this gesture, while clearly in the tradition of the Duchampian readymade and the appropriation art of Sherrie Levine or Louise Lawler, differs in the absence of acknowledgment. The work is neither antagonist nor ironic; Snyder's practice claims this material as his own, and, in doing so, not only questions notions of authorship but of factual truth itself. As Daniel Birnbaum has written:

> "Entering what might seem to be a hermeneutical labyrinth as puzzling as the hieroglyphs were before the deciphering of the Rosetta Stone, we question whether we should take what the artist has excavated as factual or ask further questions. Or should we question the source from which the references are extracted? Do we even want to look for the source of the reference, or could we even find it?"[1]

The artist, whether appropriating tele-visual or online media (a distinction gradually disappearing in the expansion of interactive technology and niche programming), acts as a cypher, a selector of anonymous and interchangeable items. There is no attempt at authenticating the material or its source. The quantity of information available is significant here; for every point, there is a counterpoint; for every apparent statement of fact, there are a number of variations, contradictions, possibilities, refutations. The news report, once assumed to be singular and incontrovertible, gives way to particular positions, to different takes. The factual has been made aesthetic. Snyder's digital prints of photographs taken by soldiers in Iraq (*Untitled [Iraq]*, 2003-05) — of shots from behind rifle turrets, of Saddam Hussein's hideout, of improvised explosives — refine this approach. The implications of the death of the author, and of authority, transcend the theoretical, textual play of art criticism. They end up 'embedded' in moral ambiguity and indecisiveness, in the snapshot which aspires to neither pacifism nor propaganda. Rather, these images retain a critical distance and detachment, through layers of camera lenses and mediated representations. And yet, the passivity of the relative position, the refusal to take sides, betrays a very specific strategy of power and hierarchy.

There is a rough analogy to be made between the contemporary discursive field, essentially the postmodern complex itself, and the internet, as a technological

network of disparate, yet equivalent, sites. Both are anti-hierarchical, or presume to be, and non-linear, although, again, the freedom of the viewer is measured by a pre-determined sequence of hyperlinks, of limited options (they are both systems, after all, and must follow the logic of that system, whether a theoretical construction or a set of algorithms). The subject is guided through their own course, charging at breakneck speed through different channels and conduits, sudden intrusions, familiar points (an e-mail account or a bookmark, for example), reversals, updates, screens within screens, yet always leaving other sites untouched. It is not so much infinite as impossible. The sheer volume of data and

Rainer Ganahl, *Fox News: Homicide Bomber Kills Four in Gaza 1/11/04*

imagery, and their relentless propagation, is a continual reminder of the unverifiable nature of content, the uncertainty of origin, and the equivalence of value.

Rainer Ganahl's *News Paintings* (2003-04) follow a similar trajectory, in which the artist searches internet news sources, prints them and contracts the painting out to assistants (mostly found online as well). These 'freeze-frames' of what are effectively fluid sites draw attention to the formal organization and properties of the news page, and the manipulation of its reading through these devices. The changing image is slowed down, stopped, and fixed in paint (a medium loaded with connotations of timelessness). In the work *Fox News: Homicide Bomber-Mom Kills Four in Gaza, 1/11/04*, the transitory nature of the online report, soon to be displaced by celebrity gossip and domestic politics, refuses to disappear in the ongoing proliferation of information. And yet, the actual lack of equivalence of these articles is shown up in the headline, and the emphasis on Palestinian acts of violence over Israeli oppression. The capacity for manipulation remains; in the leveling of values, the reprehensible is justified as merely another point of view.

A letter to the artist Bjarne Melgaard reads: "The pictures you have provided me with past weekend keep on reappearing before my mind's eye. It has hardly anything to do with their unusual; one might say provocative character but everything with the fact that their source remains unknown to me. Without their context of origin these photos — I guess you got most of them from obscure sources you will not reveal or through the internet — remain an enigma […] In the end the observer will not even be able to find out if this is documentation of suicides, the pictures might as well be visual proofs of murder scenes. This ambiguity haunts me."[2]

The lack of explanation, of authentication, renders images problematic. The strategy of appropriation is, therefore, also a reflection of artistic uncertainty. Does the artist even know whether such images are real or fake, documentation or fiction, reportage or propaganda? For the post-appropriationist[3] the image, allegedly free of any defining rationale, is there to be contextualized, to be adapted to serve some purpose (even if this purpose is an idealistic aporia of interchangeable, free-floating signifiers). The artist merely uses what already exists, what is there on-screen, ready to be downloaded and detached, re-used, re-made, re-configured. In doing so, new meanings may be assigned, but never with the assurance of truth. Rather, meaning is malleable, perhaps existent, yet unable to be proven, and it is this condition, this facility of the image to be used to any and all intentions, that represents the almost discernible, barely perceived fragment of truth.

Supported by Arts Council England

1 Birnbaum, Daniel. 2005. *Sean Snyder*. Köln: Walther König, p. 4.

2 Demeester, Ann. 2002. "No Answers." In *Bjarne Melgaard: Black Low*. Bielefeld: Kerber Verlag, p. 24. Melgaard's choice of material, typically drawn from Black Metal and S&M subcultures (themselves firmly located in online sites and networks), plays on the notion of authenticity. In appropriating the codes and paraphernalia of youth and outsider culture, the artist reiterates the ambiguity of these interests: are they juvenile phases or warning signs?

3 A previous usage of this term appears in John C. Welchman's *Art After Appropriation: Essays on Art in the 1990s*. However, considering the topic, I would hope Welchman tolerates my own 'appropriation' here.

Into the Locative: Grassroots Cultural Production and the Digitalisation of Urban Borders

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Much research and cultural production in the last ten years have focused on ideas of mobility, liquidity and movement brought about by a new geopolitical model based on the deterritorialized and all comprising networks of Empire, by the erosion of previously stable nation state borders, by migration flows and by seemingly ubiquitous (new) media technologies. A parallel rhetoric on the power of technologies in levelling inequalities and creating social change has led to the fetishization of the idea of movement and technology in the creation of new forms of power and belonging.

At Dualkollektiv departing from ideas of networks, mobility and deterritorialization, we started asking questions about borders, their materialization and de-materialization, their reconceptualization within the city in the form of enclaves and flows. What happens, for instance if we look at the distribution of infrastructures on the territory? Does access to technologies translate in active use of these technologies? Who owns the service providers and what is their relation to mainstream and non mainstream digital media? Can we still make such a distinction? Are we really a 'city of villages', according to one of the City of Sydney branding tags, that suddenly, thanks to digital technologies becomes part of a global neighborhood? Which meanings are given to the city through media arts? Which stories are told with the aid of digital technologies?

We started imagining what would happen if we layered three different imaginary maps over the city of Sydney. The first one maps the city that takes into account its affective borders: those borders determined by social and cultural practices that fragment the urban fabric in enclaves sometimes criss-crossed by flows and sometimes not. The second one is a map of infrastructures: the distribution of diverse kinds of internet networks and the institutions (such as galleries, museums, theatres, universities and arts organizations) active in the promotion, education, production, distribution and audience development of media arts. The third one maps the borders of media arts.
Let's start with the last imaginary map. In 2006, the Australia Council for the Arts, the Australian Federal Government's funding and advisory agency, commissioned a new media scoping study. The report redefined new media as simply media, stressing how artists used a combination of 'existing, new and emergent technologies' (Donovan, Miller and Lally, 2006: 9). The report also highlighted the lack of infrastructure, both at the production and at the distribution and consumption level, which brings us to our second map.

The spectre of the 'digital divide', clearly a border in itself, surfaces in the report in relation to those artists located within 'communities' — those artists who are either Indigenous or of a non English speaking background. Media arts, according to this discourse, have a particular 'enabling' potential. Functioning as a tool of distributed agency and participatory practices in the most disadvantaged sectors, media arts is seen as making better citizens. If it wasn't for the 'digital divide'.

The rhetoric of the 'digital divide' needs to be unpacked and cannot simply be reduced to a matter of access and equality. It needs to take into consideration cultural differences, differences in the way artists and communities use digital media, the professionalization and education in media literacy of practitioners and audiences and the distribution of media arts.

The notion of 'digital divide' needs also to start from very basic data and interrogate the link between the 'enabling' potential of media arts in the making of new senses of citizenship, mainstream media, the high end of contemporary arts — to which much of the discourse on new media is catered — and media capitalism: not all broadbands are born the same. If new studies show that almost 10 million Australians live in ADSL-2 enabled

Khaled Sabsabi, You, 2007, Video, mixed media. Photo: Khaled Sabsabi

neighbourhoods (CRN Magazine, 2008) not much is publicized about the (non)spreading of optic fibre.

Similarly, while established media artists recognize the need to interact across the institutional spectrum, the institutions themselves, such as galleries and museums, seemed reluctant to engage with the more experimental forms of media arts (Donovan, Miller and Lally, 2006: 17). The problem here appears to be one of distribution, not simply of access. The professionalization of emerging artists should go hand in hand with the professionalization of institutions.

Some arts organizations, notably ICE (Information and Cultural Exchange), a media and community organization at the forefront in the use of creative practices and media in community building, have moved the discourse of the digital divide into the sphere of education and professionalization. ICE, located in Western Sydney, the most culturally and linguistically diverse region in Australia, home to the largest Indigenous population and the third largest regional economy in the country, provides both access to technology in itself in the form of a multimedia lab, and to forms of training that go well beyond technological training to explore narratives of self and belonging and create situated understandings of the city. Not surprisingly if we look at what is produced by ICE often in partnership with other institutions and organizations, we find works concerned with 'the locative', the microcosm of the embodied realities of Western Sydney, the emplacement of its affective borders, recounted by several voices.

These narratives develop a sense of both personal and collaborative agency for people excluded from formal, structural and national constructions of citizenship. Media arts become then a process of renegotiating belonging, claiming rights, producing localities and constituting communities (Rosaldo 1994: 57). Much of this process entails crossing borders, material or otherwise.

Khaled Sabsabi's wall installation, *You*, (video / mixed media, 2007) as part of the *ON' n 'ON* provides a hint for non Muslim and Muslim alike as to the immanent and perceived power of the imam. An image of Hassan Nasrallah, Secretary General of Hezbolla, stares directly at us. The screen multiplies into a myriad.

A wall full of Him confronts the viewer with the seductive power of His image as it constantly transforms. His repeated image in different squares is at different stages of transformation — coming into focus with the finale an explosion of light in the background which appears to emanate from his head — the spiritual leader, the explosion, the emergent power of Islam are all suggested in this work. As audience we can participate in virtual religious crossings through this piece of power signifier.

In *The Obstacle is the Path* artists Ali Kadhim traces the story of the first Le-Parkour workshop in Sydney. We see young people trained to jump, fly and run. The intense re-marking of the territory that creates borders and ghettos becomes transformed by unexpected creative leaps that defy barriers and walls. It requires prowess that is utterly knowledgeable, flexible and self reliant — no ropes or gismos — to remake the 'new country' into something that edges into a form of conquering that can lead to a "sense of belonging" which eschews borders (in this case — of urban high rises).

Perhaps what we are looking for is a form of *new media a la parkour*.

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An Intelligence for Cross-world Collaboration, Real and Virtual

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Introduction

An artificial intelligence (AI) manifests itself as an environment that links the virtual and real. The AI provides a mechanism for collaboration, but has its own motivation. Avatars can move objects in the real world and vice versa. Border crossing between virtual worlds implies a meta-logical system that transcends all worlds. Providing collaboration between real world people and avatars (where the avatars and the real people are equal players) leads to insight into the meta-logic. The AI emphasises the meta-logical barriers.

Media

It is a multimedia installation utilising of the following:

- Electro-mechanical devices
- a 3D webcam
- SecondLife or other global, multi-user, immersive virtual environment

Description

The manifestation is a physical space with a wall projection that bridges the real and virtual worlds. Humans entering the space see the projected virtual world (VW) space. Avatars in the VW space see the humans represented by avatars: their movements in real life are tracked by a 3D webcam. The humans and avatars work on an apparatus, parts of which are in "real life", and parts of which are in the VW space. Once the apparatus is arranged into a configuration, the apparatus performs a series of actions that move between the VW and real life. Avatars and humans are rewarded for participation.

The AI has its own logic and motivations that are autonomous of the actions of either set of participants. What neither side knows is that the software which controls the space can also set off special effects, making it appear as if one side has attacked or threatened the other. The AI may decide to interfere (cause a grievance) or to help.

Images

A short timewise but BIG (400 MB) avi of the prototype can be downloaded from http://virtual.weltec.ac.nz/crossworld.avi.

Strategic Transmissions: Livemedia and the Intensive *Spatium*

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This paper seeks to contextualise the contemporary field for the project LIVEMEDIA and to propose a networked space, or Extranet possessing the qualities of intensity and duration. The contemporary field is identified as the Internet, the networked space is identified as an Intensive *Spatium*.

LIVEMEDIA (http://www.lab-livemedia.net) is an artist led project based in Barcelona collaborating with cultural and academic centres in Spain, France and Latin America. Its aim is to exploit the platform of the Internet as a live environment for transcultural and interdisciplinarian collaborations. LIVEMEDIA aims to use real world spaces in convergence with the telematic spaces of the Internet for the creation of simultaneous, complicit and intelligent "live mediated environments". The premise of production is the articulation of a networked field for emergent live assemblages. Heterogeneity should be inevitable.

The Internet is the world's largest and most complex network, processing and driving the globalisation of culture and communication. It is a perpetually transformative space where "value" is constantly fragmented by infinite streams and manipulations. The Internet is increasingly becoming a live environment. In March 2005 Adam Bosworth, then vice president of engineering at Google, stated: "Presence is in the air. The web because of mobile and broadband and Instant Messaging is becoming real-time. Real time presence changes everything and rapidly leads to thinking about much richer ways of communicating within communities."[1] During the last year, commercial web development has morphed from Social Networks (MySpace, Facebook) into Social Media (Kyte, Twitter, Jaiku and Qik). With these real-time web applications it is possible to communicate, syndicate, aggregate, stream, or even *broadcast as a conversation* data, from anywhere, at any moment, via any intelligent device.

Social Media web applications are at the vanguard of the ongoing convergence between Internet and mobile telecommunications. Evidenced by the movement away from the stationary access point of the computer monitor to any intelligent device, we are witnessing a realignment of the online<·>offline interface. Our tacit online<·>offline interface is becoming fuzzy and fragmented. The spectacle is over: soon all will become mediated. Now we are always online. Now streams of communication follow, forming kinds of *bioweapons*.[2] How soon is it before we ask: *How can I be* "off" *offline*?

Central to this paper is Felix Guattari's observation: "But how, with [...] this fragmentation of interfaces, can we still speak of Universes of value?"[3] For Guattari fragmentation represents both a destabilisation of globalised aesthetics and the striving towards a new ontology of creativity. Destabilisation is the moment of engagement with mutant assemblages of enunciation, a contamination of the ideal monad and the creation of intensive transversality, diversity and heterogeneity. We understand these processes as the actualisation of difference. Continuing with Guattari's terminology, the question at hand is what tool or medium has the capacity to activate the necessary contingents that engage the composites of enunciative assemblages, actualise infinities and break the established formal boundaries?

Within electronic art, an example of how Internet technologies have been used to fragment the online<·>offline interface is found in LIVEMEDIA's antecedent *Theatre Virtual* (2001-2006).[4] Here the ongoing problematic concerned the investigation of actual connections between theatre and Internet. The attractor or tool of engagement was livestream video. Following Paul Virilio's analysis of the logic of the image through its ages of "formal", "dialectic" and "paradoxical", to have approached theatre from the virtualities of second generation Internet technologies (i.e. "non-html" Internet content) represented the construction of a paradoxical image.[5]

> Values only have universal significance to the extent that they are supported by the Territories of practice, experience, of intensive power that transversalise them.[6]

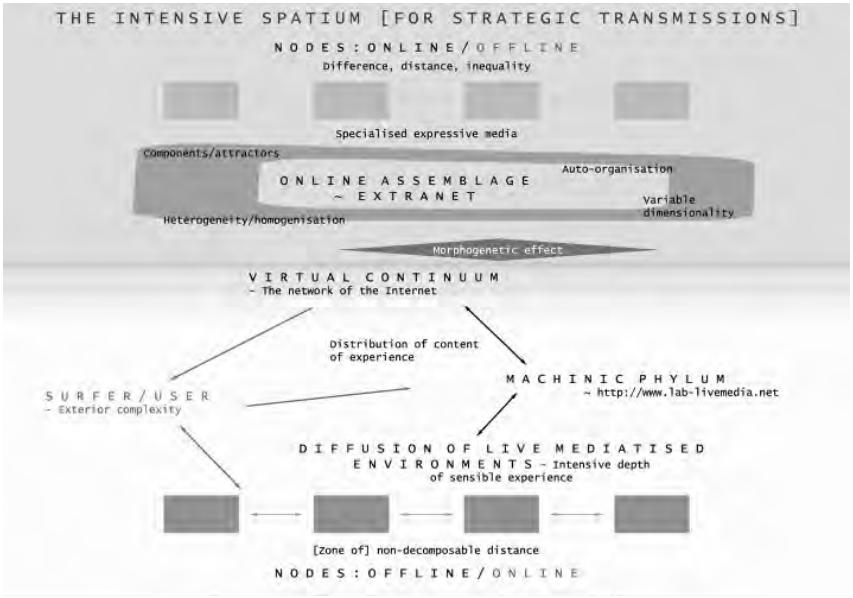
LIVEMEDIA investigates the Internet's emergent "live topologies", where communication is subject to advanced techniques of control, where experiences complexify and disperse, where assemblages populate and differentiate live processes. The intention is to implicate a new kind of dimension that envelops "the multiple durations of disparate cultural formations and milieus".[7] It needs to be "hackable", "viral", open to micro-ecologies and fluxes of intensive interconnections.

Implicit to any emergent live topology is the need for a heterogeneous network. Guattari theorises a position where modern communication has the tendency to standardise subjectivity which, at its most extreme, becomes no more than "an exchange of information tokens calculable as bits and reproducible on computers."[8] If the tendency of communication is to veer towards homogeneity rather than heterogeneity, is there an alternative concept? In his book *Transmitting Culture* Régis Debray presents a comparison between communication and transmission. For Debray "Communication excels by cutting short; transmission by prolonging. […] Human beings communicate, more rarely do they transmit lasting meaning".[9] Debray asks: "How does the mediated object of study transmit itself and its meaning?" and concludes that "the art of transmission, or making culture, consists of adding a strategy to logistics, a praxis to a techne. What persists over time is the art of composition."[10]

What is required is a complex, multiple and strategic composition of space, where assemblages of transmissions are reflected by duration. LIVEMEDIA recognises: an anthropological space — an intensive and distributive space (or Intensive *Spatium*) — a space for resources and formation — a space for cultural and artistic events.

Our focus is on the term assigned to the creative zone of the Intensive *Spatium*. Irreducible to concepts and open to ideas, the Intensive *Spatium* "actualises connections" and initiates presences, in the sense of productions or emergences from the total field (schema, magnitude, matter, designation). Some may ask: why are we not discussing the complexities of the rhizome as most famously theorised by Gilles Deleuze and Felix Guattari in their book of 1980 *A Thousand Plateaus*? In short the concept of the rhizome is not sufficient. Substantially, it is a perfect description of the World Wide Web, whereas the Intensive *Spatium* refers to experience and to the intensity of experience, bringing a positive characteristic of depth for the determination of ideal connections and differential relations.

The diagram *The Intensive Spatium (for strategic transmissions)* is drawn up from Manuel DeLanda's notations on the Deleuzian Intensive *Spatium*.[11] Although it is possible to think of the Intensive *Spatium* in the singular as the "intensive depth of sensible experience", as with the majority of Deleuze's concepts, the Intensive *Spatium* has many names including *machinic phylum, virtual continuum, body without organs and plane of immanence* — each name being dependant on the process at hand. The intention is to use these different moments or kinds of processes to construct an operativity within LIVEMEDIA's networked space that is inclusive of: online<·>offline, assemblage, transmission, distribution, diffusion and so on. The significant addition to the concept of Intensive *Spatium* is the "surfer/user as exterior complexity."



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The Use of UGC and Web 2.0 in a New Media, Digital, Non-Fiction, Collaborative Project: A Laboratory Research Assessment

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This set out to investigate and to critically assess the Use of UGC (User-Generated Content) and Web 2.0 in New Media Digital Non-Fiction for a Collaborative, Wiki-based project. This was created to raise awareness of a socio-political Issue (in this case, the detainment of Nobel Prize winner, Aung San Suu Kyi, in Burma, also known as 'Myanmar', by the military junta).

Research questions

Build it and they will come…" Does the establishment of an activist online presence in a website necessarily generate a written response from interested users?

What New Media methodologies and tools can a journalist and non-fiction writer harness effectively to create awareness on a given topic, as well as to generate written responses as part of a widespread, viral collaborative community action?

Which platforms work best for such a project? Are they wholly computer-based, or is a more telephony-based (SMS) approach more successful and if so, why?

Which Web 2.0, Social Networking, SMS (Short Message Service) and Wiki and other tools can be used most effectively by an editor/writer in this kind of project? Are some better suited to the task than others and, if so, which ones and why?

Literature review

(available online with bibliography at:http://cwnmlabresearchproject.googlepages.com/)

Set-up of mission website

The Free Aung San Suu Kyi organization, can be found here: http://freeaungsansuukyi.org/

The site designed by a highly qualified, professional web graphics designer of the Editor's (Peter Popham's) choosing whose main concern was to provide the most aesthetic background on to which the text could be super-imposed. This site was built by the designer and published using Plone CMS, open source software management. Previous reading research had shown that the implementation of some Web 2.0 ideas can, indeed, put users off or can be shown to be inconsequential to the users' core needs.

The participatory media project for Aung San Suu Kyi

can be found here: http://108presentsforsuu.googlepages.com/

Google Page Creator had shown itself in use to be most useful by an HTML layman for set up for the companion project site. The temptation, though, was to implement as many tools as there are room for on a page simply because they make a site entertaining as well as informative.

To blog or not to blog?

Blogging is an essential part of keeping a website alive as well as useful to its reader. Experienced print journalists are often reluctant to blog given their full-time print schedule. Updates to the message site, therefore, have been very ad hoc and have never established the sort of rhythm needed to attract and keep regular readers.

Investigation into generation of SMS text as content

Image 1

This stage of research focused on the possibilities for using SMS networks to generate text, either existing ones that could be 'piggybacked' upon, or effective and inexpensive set up of a brand new, dedicated network for the project.

Frontline SMS (**Image 1**, facing page), has, research shows, played an important part in the texting revolution, creating a mobile bridge in the digital divide. Instead, though, Twitter, a form of microblogging, was chosen for ease of setup. Having signed on through a web interface, IM agent, or by text, messages of 140 characters or less can be sent free as frequently as the correspondent wishes.

Investigation into, and selection of social networking site

The use of Twitter alone would not, research had shown and Howard Rheingold had emphasized,[1] sufficiently ground the project and so a suitable Social Networking Site had to be selected to couple with the project microblogging. According to the research, "Facebook is the most popular service among students, with almost four in five using it, and over half of the overall sample doing so frequently". It was determined that MySpace was used by more than half of the sample, although just over one-third uses it often.

Set-up of a Facebook site, ID 'Twitter Suu'

The Twitter Suu Facebook Profile (for Facebook members only) can be found here: http://twitter.com/freesuukyi08.

Image 2

Once established, the Facebook site was used to explore similar groups as well as to identify ('phish') users who would be willing to 'friend' Twitter Suu and write on 'The Wall' to send Suu Kyi a message to generate content. The coupling of Twitter and Facebook has worked greatly to the project's advantage.

A closer look at meta data

Content alone would not be enough to drive visitors to the site[2] but rather that meta data, that is data about data, or a system akin to cataloguing of books in a library, must also be employed. Look at TechCrunch's tag cloud courtesy of technorati: (Image 2). Rather than a tag cloud, a 'TweetCloud' was used to define and sum up the issues surrounding Aung San Suu Kyi.

Establishment of a wiki to gather and to process generated text

The Twitter Suu Wiki (open to all) can be found here: http://108presentsforsuu.pbwiki.com/
Wikis are databases that can be edited by everyone, sometimes restricted through authorization processes. In a wiki you only need to know a few rules to edit articles, as in a blog but in contrast to a blog everyone can edit everything, and everyone can start a new topic.

Analysis and conclusion

This project has shown that while New Media offers significant advantages, it more often than not perplexes Old Media news professionals.

The establishment of an activist online presence in a website does not necessarily generate a written response from interested users. Not even those who had expressed support for Suu Kyi were necessarily moved to take the further step of sending her a message. The names of those who did sign up (either through email to the dedicated address: 108presentsforsuu@gmail.com, or through Facebook or Twitter), are, however, an important resource.

New Media tools have also been used successfully to proselytize those who knew nothing of Suu Kyi. This has been particularly true of the young, notably college students in the US, who continue to be mobilized successfully to sign on to the Facebook site. The use of Twitter has been less successful, despite the generation of media coverage in The Wall Tweet Journal (sic) on April 7th, 2008. While New Media and Web 2.0 tools are essential ingredients in the successful generation of content, they are no substitute for a community created through bonds of common interest beyond the web, where the bond is the key not the technology. The tools used provided a useful adjunct to the community being created but they cannot BE the community.

This research has confirmed that a telephony-based SMS rather than Web interaction with interested contributors could in the long-term be very effective because of its ease of use, minimal time required, and low threshold of knowledge and equipment but, in this case, ONLY if coupled with a Social Networking site such as Facebook.

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(The original, fully referenced, 5,000 word paper with bibliography is available online at: http://cwnmlabresearchproject.googlepages.com/)

Settler Dread and Indigeneity: Digital Media Arts in Oceania

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Shown initially in somewhat reduced form at Te Manawa Museums Trust in Palmerston North, Aotearoa New Zealand, in 2006-7 and later at the 2007 Venice Bienale, Rachel Rakena and Brett Graham's video sculpture *Aniwaniwa* is built from fibreglass moulds, set with traditionally-derived carved motifs appropriate to treasure boxes, suspended from the ceiling. Placed in each treasure box is an acrylic dome screen showing projected elements from a bank of video recordings, for the most part shot underwater with performers in traditional dress. Both artists are Maori. Brett Graham's iwi, Ngati Koroki Kahukura, live around the town of Horahora, where his grandfather was an electrical engineer based at the town's hydro generating station which supplied power for the gold mines at Waihi. Horahora — 'spreading' — was named for the Tainui ancestor, Turongo, and his wife, Mahinarangi, who stopped there to spread the baby garments of their newly born son, Raukawa (founder of Ngati Raukawa), out to dry. Among the source materials are photos of Graham's family as children at the power station. This ancestral and childhood home was flooded in 1947 to provide hydro power for the new generating station at Karapiro. Because hydro plants were still rare in the Aotearoa of the 1940s, the Horahora plant was still supplying power to the grid as the waters poured in to form the new lake. As a last memento, Graham's grandfather left a motto on the dynamo cover: "Kia Kaha ake ake", "be forever strong". Local legend had it that the turbines refused to die, even when they were inundated. In an e-mail on 2nd October 2006, Graham notes of the loss of sacred historical sites in the flooding. "I had expected to be moved by this. I had not anticipated being moved by the fact that our people had mourned the loss of the power station and the community it had created."

Across the motifs engaged in the work, images of water and domesticity predominate; across them the intensity of the local experience is set in communication with traditions, notably the role of Tangaroa, water and sea, who is also the messenger and Tangaroa Piri Whare, who brings the news from shore to shore. The video element, like much of the carved work, speaks of riverbanks, and in some imagery of the foreshore, subjects of extremely contemporary relevance to the political landscape of Maori-Pakeha relations and beyond them the conception of radio frequencies as taonga, traditional treasures like rivers and seas. In these relations of indigenous people to submersion we should read too not only the metaphor of drowned memories but the actuality of global warming and its specific threat to the Polynesian islanders of the Pacific.

I like the domain name for my next project: halo.gen. Aniwaniwa is the name of the rapids formed at Horahora, and means, among other things, 'rainbow' or 'halo'. Launched in 2006, Douglas Bagnall's online artificial intelligence *Cloud Shape Classifier* introduces itself with the cautiously deadpan phrase "Many people would like to see interesting clouds, but lack the spare time in which to look upwards." The system works on the basis of the mathematisation of images. Each webcam image is between 800 and 1000 Kilobytes, which the server reduces to a set of 57 numbers accounting for normal visual qualities such as RGB levels and contrast. Users set up a classifier, a multilayer perceptron neural network, which further reduces the 57 numbers to one, "which is used as a measure of goodness". Invented in 1957 and first demonstrated in 1960 by Frank Rosenblatt of the Cornell Aeronautical Laboratory, the perceptron was one of the first tools invented in artificial intelligence research. Comprising an input layer and an output layer, with all nodes interconnected, the perceptron applies a 'weighting' to each connection, weightings which can be altered through a process of training based on adding more 'weight' to connection patterns which approximate a desired result. Objects of Minsky and Papert's infamous assault on network solutions to artificial intelligence in their 1969 book *Perceptrons: An Introduction to Computational Geometry*, perceptrons fell out of favour for over a decade until brought back under the sobriquet of Hopfield networks. Multilayer perceptrons as used in Bagnall's AI differ in having non-linear activation functions, modelled on biological brain functions, which allow them to distinguish non-linear data: like clouds.

Hand coded on a Linux box, *Cloud Shape Classifier* might be seen as a low-tech parody of the wilder claims of the AI community. What makes a cloud 'good'? What is the meaning of training a machine to find 'good clouds'? The idea of training is multiplied in the network, where each classifier has access to several networks, each subject to mutation of the originating pattern from the user – "guesses" as to what might be a suitable cloud. The networks that most closely match the user's choices are nurtured. The idea is that the user will inculcate their taste in clouds into the classifier. Of course, most users seem to come in with no idea of what that taste might be. Some classifiers have names suggesting they have been deliberately training for a specific outcome: dark clouds, for example, or images tinged with the rose light of sunset (or is it dawn?). But at this stage you begin to ponder where the user, who has so little time to look at the sky, gets the time to train her surrogate. Wouldn't it, after all, be just as good to go outside and, well, look at the sky?

In 2006, a gallery version of the piece was installed as part of the ISEA2006/ZeroOne festival in San Jose, and in 2007 as part of the Shanghai Science and Art exhibition. In his notes to the gallery version, Bagnall notes that, "You see the same clouds as on the web". Which begs more questions: what is the specificity of the camera involved? Where is it? How come it's always daylight? Is the camera ever close to the user? Would they see the same sky if they went outside and looked up? Would it matter? The sky is one of our greatest emblems of freedom. Even in the 21st century, weather has an autonomy that no other part of the planet has maintained. Now we know about the Great Pacific Trash Island, and the mercury levels in the Antarctic. No matter where you stand, the same sky is above you. Under the sky we are all equal. But then, so are all places. The database, however constantly refreshed, is at heart a storage medium. These clouds have been: but they no longer are. My guess is that behind the dry humour — based in some sense of the disjunctures between a training in taste, the pretensions of AI, and the ubiquity of both the web and galleries as place-neutral frames for experience — the loss of a contemporaneous moment for looking up at the sky is the central theme of the work, and the reason why it is more than the humourous candy-floss that first appears. This uncertainty about place distinguishes the pakeha sensibility as a settler culture, one whose relationships are more deeply with what is common and, as with the sky, universal to all humanity, and far, far less to the lived currents of history, aqueous and electric, which flow through Graham and Rakena's work.

For indigenous, settler and migrant cultures, places operate very differently. Creating places in digital media is always a matter of transience for all three. This is not only a matter of the ephemerality of the medium. It concerns the relationship between the user and the artefact. The transient places created in digital media are not traditional, even when they draw on and place themselves in relation to tradition. Human life, Vilém Flusser argues in the essay "We Need a Philosophy of Emigration", is contingent, dependent on the nature and culture where we find ourselves. The escape from this condition of contingence is irony, 'This place that is free of things' (2003: 21).

> The movement into irony is an act of outrage. And with this motion a person rises above contingence. Movement away from irony is a form of engagement. With this motion the person returns to his state of contingence to change it. These two movements taken together are called freedom. Human beings are free because with this inexplicable and unpredictable movement they are able to become outraged about their contingence and to change it. Because of this potential, we are virtually free, and when we complete this action we are actually free (Flusser 2003: 21-2)

The works presented here are ironic in the sense that they take a step outside the contingent. They turn the

resources of the past into ironic commentaries on the present's contingency upon the past. They provide the grounds on which a future can emerge other than the eternal present of the circulation of commodities. Flusser offers to name the flight into irony emigration, and the return from it immigration. The exchange of one contingence for another is the possibility of irony, and of a critical commitment to the home or host culture. Of course, this will never be happy or safe. Rakena and Graham's work is not ironic in itself: it is a response to the ironic dis-placing of indigenous Maori culture which has uprooted their ancestral and modern contingency upon nature and culture. Bagnall describes the Nietzschean moment in which the settler is free *from* the European heritage, but has not, or not yet, committed to the host sky under which they now have their being. Bunting refuses the ease of uncommitted travel, uncommitted browsing, but slyly reveals both the artifice and the actuality of migration. Nonetheless it is the specific freedom of the migrant, whether in deep reflection on the changing contingencies of indigenity, the critical observation of the settler's unhappy lack of commitment, or the revisioning of migration against the rise of protocol as the typical informatic regime of contemporary power. Transience is not only the opposite of ephemerality: it is the opposite of contingence. Such freedom as the migrant has is the freedom each of these artists in their own appropriate ways explores: the deep curtailment of freedom which we demand of ourselves, when we recognise that personal freedom is worth nothing without ending the dependence of both home and host on the nightmare of history under industrial capital, or the eternity of the present under globalisation.

Note: This paper is part of the panel presentation — Eastern-Western Interaction in Digital Media.

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Connected 07

cym
Artists: Belinda Ziegler, Eva Nina Cajnko, Franz Bauer, Luka Princic, Nicole Pruckermayr, Primoz Oberzan, cym
wd8@mur.at

Connected:07 is a project that plays with connecting different realities. The project was initiated by cym and consisted of two phases. The first phase, the analog phase, took place during summer 2007 and focused on connections in the real space. The second phase, the digital phase, focused on connecting the real space and the virtual space and was presented in November 2007.

Real and virtual spaces can be found anywhere. The real space used for Connected:07 is an old farm in South-East Austria, that cym is turning into a small art center. In the first phase of the Connected:07 project, different artists were invited to spend some time at this empty farm and create art works, inspired by the abandoned building, its history and its surroundings.

Eva Nina Cajnko started the project by creating giant spider webs all around the old house. The spider webs, some of them more than six meters wide, were placed in locations where they are usually removed to clean the house: in a corner above the door, in the attic, in the window. They were made from thin ropes, carefully knotted together, reminiscent of traditional crafts.

The spider webs were followed by a sound installation made by Luka Prinčič. He placed his installation inside a wardrobe over 100 years old, that was left in the farm by the woman who used to live there before cym moved in. The sound installation inside the wardrobe encourages the visitor to listen more carefully to the original sounds in and around the house.

A project that lasted all summer was the pig-project by Belinda and Boris Ziegler. They decided to create a lifesize pig for the pigsty. As a first step, to get the exact measurements for the animal, they measured a real pig

Wd8 - Art in the Pigsty

in one of the neighbour's houses. During the next two months a lifesize pig, made from wood, chicken wire, old newspapers and finally polyester, slowly emerged.

Inspired by Gsellmann's Weltmaschine, Nicole Pruckermayr started to build a machine especially for Wd8. This project started with collecting old iron and other interesting parts in the nearby villages, until slowly a machine started to grow in one of the Wd8-rooms. A machine that can be played via an old bicycle in the Wd8 courtyard.

The same pile of old iron and found tools served as a source of material for the sculpture by Primož Oberžan. Inspired by the environment he created a creature made from old tools and other found materials on one of the old doors in the courtyard. The creature, built around a shovel and a rake connected together, turned out to be a shaman for Walkersdorf.

Local photographer Franz Bauer documented the whole process with his analog photo camera. On nine analog films, each with only 36 photos, he captured all the Connected:07 artists and their works. At the same time he made a photo series with impressions of the Wd8 building. The photos were presented hanging on a clothes line in the cow barn.

In the second phase of the Connected:07 project the Wd8 farm was connected with a virtual reconstruction of the farm. At the same time a connection from the virtual farm back to the real farm was made. In this way a loop was created that mixed the real and the virtual space, creating a kind of 'third space'.

This second phase of the project was presented as a performance by Primoz Oberzan and cym. With Gsellmann's Weltmaschine as an example, Primoz Oberzan created an instrument constructed out of found materials, which cym connected with a visualization of the farm in a virtual 3D-environment.

While during the first phase artists were looking for ways of communication within the real, analog world, the installation in the second phase of the project was looking for ways of communicating between virtual reality and real life. The installation was a visualization of mixing different realities, together creating a new Wd8 space.

No Men's Land

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In her project 'No Men's Land' cym tries to capture something of the rapid changes that are happening to the borders in Central Europe. Since 1995 cym is traveling regularly between the former West- and East-European countries and she has followed the so-called 'opening of the borders' very closely. In her project 'No Men's Land' she is following the main border that used to divide Europe in East and West.

As a first step cym is traveling to the actual borders that mark the countries. She takes photos with the digital camera at the different border situations. The photos give a good impression what this political line looks like in reality. Very often you can't see anything special. There is only the knowledge that there are actually two different countries visible on the photo.

As a second step, and this is where the project 'No Men's Land' really starts, cym creates an abstract image from the original photo. This abstract image is created entirely with HTML, the language used to create websites. The abstract image therefore is no longer an image, but only a piece of HTML code. The abstract images are not perfect copies of their original photos, but new compositions made by cym based on the photos captured in reality.

In this way the abstract images show some similarities with the political border lines in Central Europe. Political lines are constructed to define the bounderies of the different countries, but reality does not always follow these lines.

When living closely to the border, one realizes that borders are in a way just an imaginary line on paper and in people's heads. If you actually go and try to find that line in reality you will be surprised that, except of white stones every 50 meters, there is no visible line marking the country. The tree on one side looks the same as the tree on the other side. Even the house on one side looks very similar to the house on the other side. The vegetables that grow on the field on one side, are the same as the vegetables that grow on the field on the other side.

In her project 'No Men's Land' cym focuses mainly on the Central European borders. Through her photos she tries to capture something of the rapid changes that are currently happening in Europe. Many of the photos show situations that would have been impossible to photograph twenty years ago. And many of the border crossings that are still visible in the photos now, might disappear completely within the next ten years.

There is the river between Austria and Slovakia that many people tried to swim across in the night, with all their belongings above their head. If they would make it to Austria without being shot, they would be save. These days people row a boat there or swim, just for relaxation. The big piece of land around the river, that was empty to secure the border, is now turned into a recreational park where you can go for a picnic on a sunny afternoon.

Many of the white stones that mark the border around Czech Republic and around Slovenia still show the inscriptions of the old country names. The old letters were scraped off, or painted over, and the new characters that mark the new name of the country were put there instead.

Would it still make you a little nervous to cross the border ten years ago, these days festivals are organised between the borders to try to find a new use for these big pieces of land with its empty police-stations and closed tax-free shops. However, at the same time a new border is appearing around the EU. Was the situation 20 years ago that you were either east or west of the line that divided Europe, these days you are either inside or outside the lines that define the European Union.

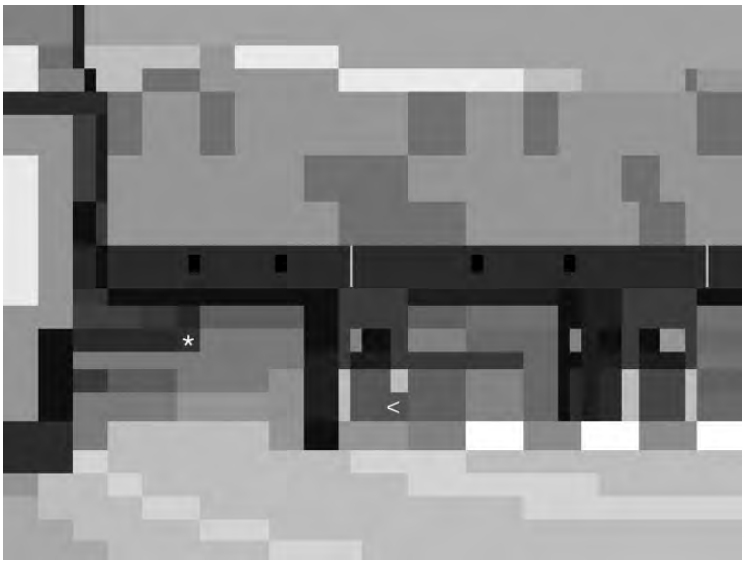
In the project 'No Men's Land' cym is creating a transition of a real situation into a new, digital composition. The transition of the photos into abstract images creates a new layer, a new map and a new way to explore the Central-European borders.

The photos in this project have all been taken after May 1st, 2004 and before December 21st, 2007 and show just

a short moment in time within the longterm process of changes in Central Europe. The selection of photos could be seen as a snapshot of the time just after May 1st, 2004, when the former, so-called, Eastern-European countries joined the European Union and before December 21st, 2007, when these countries joined the Schengen zone and the regular border controls disappeared.

The digital images created in the 'No Men's Land' project can also be seen as individual compositions, almost like paintings, without the connection to the original photo. Although it is important for the selection of the images to know the background of the chosen photos, artistically the abstract images can also be seen as individual, unique compositions.

The project 'No Men's Land' not only creates a transition from a real life situation into a digital composition, there is also the imaginary transition back to the real life situation, when the viewer watches first the abstract image and tries to imagine what the original source photo could be like, before clicking 'view source'.



Walkersdorf — Center of the World

cym
Participating artists: Pila Rusjan, Luka Dekleva, Luka Princic, cym

Walkersdorf is a small village in southeast Austria. It is east of Graz and south of Vienna, about 35 kilometers from the border with Hungary and about 35 kilometers from the border with Slovenia. It is a village with about 235 inhabitants. It is located along route number 66 that goes from Ilz to Feldbach. If it wasn't for a famous restaurant in Walkersdorf that is located directly next to this important connection road, most people passing through the village probably would not remember it.

If you take the time and make a short walk into the village behind the restaurant, you will find a village similar to many other villages in the area. If you speak some German and ask people in their gardens if there is anything special to see in the village, they'll probably answer you, that there is nothing special in Walkersdorf. "Maybe the pigs that are in a huge cage at one side of the village are worth a walk, and there is a little chapel at the entrance of the village, but apart from that", they will tell you, "there is nothing special to see."

People in Walkersdorf live their lives quietly. Most of the people have been living there all their lives, for generations. Most of the people that come from outside, that have moved to the village, come from the surrounding area, from places a few kilometers away. If you ask them where they are from, they will tell you, that they are not from Walkersdorf. They will explain to you where they are from. They will point to a hill about a kilometer away and tell you, that originally they come from the village behind that hill.

If you look on a map, Walkersdorf is situated very centrally, between five European capitals. With a car it is possible to visit Vienna, Bratislava, Budapest, Zagreb and Ljubljana, each on one day. It is not recommended to drive to Budapest and back on the same day, but it is possible. The other towns can easily be visited as a daytrip from Walkersdorf, although I do not think anyone would suggest you to do so. However, when living in Walkersdorf, these european capitals are far away. Even the neighbouring countries Hungary and Slovenia seem far away. Only the local capital Graz, which is about 45 kilometers away, seems closely connected.

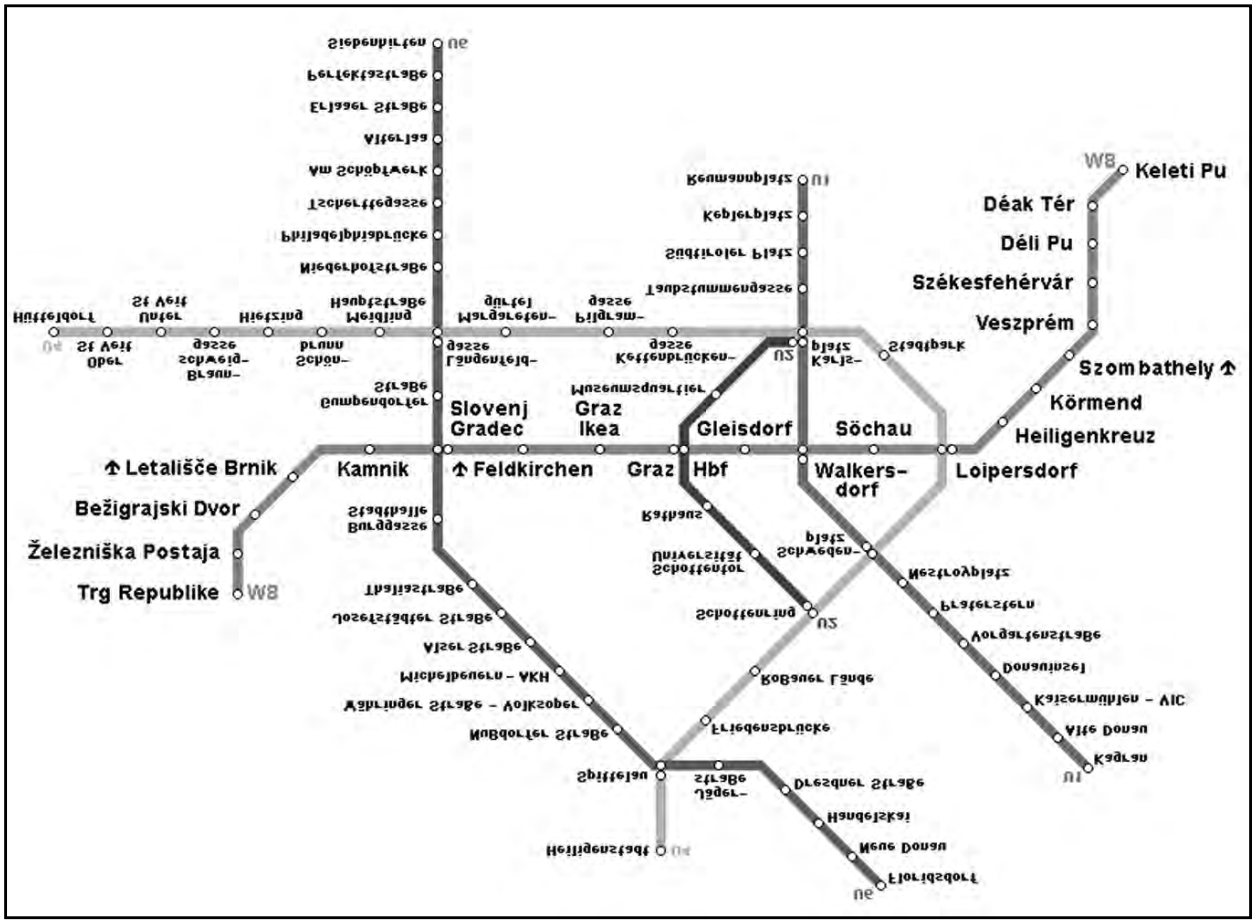
Anywhere in the world, people experience themselves as the center of their world. Everything turns around the place where you are, where you live, where you work. New impressions, new experiences and new contacts are always related to what we know, what we have already seen and what we have already experienced. The installation 'Walkersdorf — Center of the World' selects the small austrian village 'Walkersdorf' as the center of the world. A media installation turns the dimensions around and creates a world that turns around the village.

Starting point for the installation was the idea to create a metro network that connects Walkersdorf directly with its neighouring european capitals. Walkersdorf is very difficult to reach via public transport and a direct metro connection to the surrounding towns would be a great addition to the village. Inspired by the project 'Mesto pod Zemljo' by Slovenian video artist Miha Vipotnik, realized at the Famul Stuart School of Applied Arts in Ljubljana in 2006, I decided to create a metro network that connects Ljubljana and Budapest together.

I made the first sketches for this metro line in April 2006. The metro line 'W8' starts in the center of Ljubljana, goes via some small slovenian towns to Graz Ikea and then continues to Walkersdorf. From Walkersdorf it continues via some small hungarian towns to Budapest.

For the future I plan to create a second line, that connects Bratislava and Vienna with Zagreb. The intersection point of the two lines will be in Walkersdorf. The main metro station, where you can change trains, will be located in the former wine cellar of one of the abandoned farms in the small village.

When I show my sketches to the local residents in Walkersdorf the people laugh and say that it would be great to have a direct metro connection to Graz. They immediately understand that the map is just a map and



that there is no metro line to Graz and that there will never be a metro line to Graz. But it would be great to have the possibility to enter the old wine cellar and just get on the train to the neighbouring towns.

Reactions were different when I showed the map to people outside of Walkersdorf. It was not so obvious to many that this was just a virtual map. There are many examples in the world, where metro lines are built in real, sometimes even in places where it seems almost impossible to create them. In Amsterdam, Netherlands, they are digging a tunnel for a new metro line right under the center of the old town. In Shanghai, China, they created a metro network within twelve years that has a total length of more than 225 kilometers with 8 lines and 161 stations. Maybe the idea to create a direct underground connection from Graz to Walkersdorf is not as virtual as it seems when walking around the quiet village.

The installation ‘Walkersdorf — Center of the World’, that is planned for 2008 in Walkersdorf, has been inspired by the sketches for the metro network, but is following its own path. Three young slovenian video artists, Pila Rusjan, Luka Dekleva and Luka Princic, will create a video installation in and around an old farm in the village. Via small television transmitters, different television signals are transmitted around the farm. The signals can be received on small television sets. The signals will be transmitted on similar frequencies, which will cause them to interfere with each other. Visitors can create their own experience of the ‘Center of the World’ by walking around the place with a small, mobile television set, catching different signals while moving around.

The video installation forms the core of the metro station that will emerge in the old wine cellar of the farm. Mixed with other elements and interventions, the old farm will change into a lively collage of impressions from all over the world. Local visitors are invited to mix these impressions with their own views from the village, together creating an experience that could be interpreted as Walkersdorf as ‘Center of the World’.

The installation ‘Walkersdorf — Center of the World’ is scheduled for June/July/August in Walkersdorf. During this time the video installation will be installed in and around an old farm in the village. A documentation of the project is planned to be available in October/November 2008.

Website: www.wd8.org

The Contemporary Art Centres of the Soros Foundation and C³

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George Soros, the successful American investor of Hungarian origins has been an active philanthropist since the seventies. In 1979 he established the Open Society Fund in New York, an organization that supports activities in more than 50 countries worldwide. The aim of this initiative was to promote the "open societies" concept originally proposed by the philosopher Karl Popper. In the following years when the Soros Foundation and the network of the Soros Contemporary Art Centers (SCCA) became a reality, lavish praise as well as harsh criticism was regularly heaped on the organization and the people associated with George Soros.

The unique beginnings and the subsequent operation of the SCCA network including the Center for Culture & Communication (C³) cannot be fully appreciated without considering the regional socio-cultural context. What follows is not intended as a critical evaluation of the SCCA network and C³, Budapest. Such a study would require in-depth research into decades of relevant cultural history. Instead a cultural narrative is presented in the context of documented evidence and personal experience.

In 1984, after lengthy negotiations with the authorities, a compromise was reached to establish the Soros Foundation in close collaboration with the Hungarian Academy of Sciences. The stated goal was to support fresh contemporary intellectual deliberations and initiatives tied to developing autonomy. From the beginning, the Soros Foundation aimed at bringing a new working moral, new informal style, creativity and most importantly transparency into the socio-political landscape, thus introducing a tool of pluralism unknown in the last forty years. It is essential to record the significant aid provided to many other causes such as health, the oral history program, English language education manager education, student exchange programs, publishing, environmental and ethnic minority causes including the Roma, etc. It is crucial to note that no pre-existing plans or precedence were available at that time.

The list of projects supported by the Soros Foundation is long and complex, including the establishment of the Central European University in 1995.[2] From almost the beginning, the Foundation's activities included major support for the arts, especially for innovative or experimental art projects. This becomes even more significant when one considers that experimental and/or alternative art practice was practically prohibited in the socialist era. From 1985, the newly established Soros resource centre provided information on contemporary Hungarian artists to students, scholars, collectors and dealers from within Hungary and abroad. In 1991, the Documentation Center expanded its activities under the name: Soros Center for Contemporary Arts (SCCA), Budapest, with the aim to better support contemporary Hungarian culture.

The Budapest-based SCCA served as a model for opening similar hubs in other countries The notion of this expansion came from George Soros himself. Between 1992-1999, twenty Centers were established in seventeen countries with a mission to support the development and international exposure of contemporary art in Eastern and Central Europe. According to the stated philosophy of Soros, it was expected that after a few years the various centres would gain their own identity. The string of SCCAs organized annual exhibitions of local contemporary art, documented the work of local artists and offered grants programs. A critical constituent of the network's operation was its educational program, including the organization of seminars, conferences and lectures.

The role of the art centres might be considered vital at a stage when interest from the West was focused on the opening societies of the Eastern block, with the art centres providing information on the local art scene, organizing studio visits, exhibitions, and supporting their artists.

All over Central Europe the annual Soros exhibitions provided a much-needed impetus for contemporary artists. From the Budapest based projects the Butterfly Effect, an exhibition of media works and series of events by Hungarian and international artists in 1996, had the most far-reaching outcome.[3] This very first large scale media art event in Hungary — included an historical exhibition of Central and East European technological and experimental inventions, an exhibition of contemporary media art works by Hungarian and international artists, an international retrospective of video, film and animation works, multimedia performances and symposiums on media theories and practice and technological discoveries in the field of media art. The incredible public successes of the Butterfly Effect eventually lead to the establishment of the Center for Culture and Communication (C³) Budapest.[4]

C³ opened in June 1996. One of the primary reasons for establishing this Center was to develop a large-scale facility for Internet access including schools, NGOs and private individuals. In addition to public access, C³ also offered educational tools such as ongoing courses for Internet use — a contentious situation arose in the non-profit motivated environment. Of course C³'s mandate went much further than public Internet access. In the Hungarian history of media art, one of the first steps included the establishment of the Intermedia Department (1990) under the direction of Miklos Peternak at the Hungarian Academy of Fine Arts.[5] In 1997, Peternak became the director of C³ and he prioritized an educational outreach program at C³ linked to educational institutions.

From the late nineties, C³ maintained an extensive artist residency program[6] and innovative annual exhibitions. Since 1999, C³ operates as a non-profit independent Foundation with the aim to develop collaborations between art, science, communications, and educational and cultural programs such as the international exchange platform. It maintains ex-index an online cultural journal, a free-mail service (a Hungarian interface for internet users), domain registration and a video archive as well as international connections and special projects.

Long-term sustainability of media centres (especially in large cities where public funding is spread among many institutions) is fraught with ongoing difficulties and remains a global problem. In the changed Hungarian economic climate, C³'s situation is no exception. In 1999 and 2000, following the restructuring of the Soros foundations, all Soros Centers for Contemporary Arts gradually became independent and ultimately transformed into organizations under the membership of the new association ICAN (International Contemporary Art Network) based in Amsterdam — or ceased to exist.[7]

The initial goal of re-integration of Central and East European artists to the rest of the world has been more or less accomplished by 2000. The next stage in the integration process is now up to the individual countries according to George Soros. While there have been numerous political and personal objections expressed against the cultural policies and funding by Soros (conspiracy theories included) the positive results are undeniable and unprecedented. One day when an unbiased observer reviews the major contemporary artists from this region, he/she will find numerous references to concepts and realized artworks supported by the Soros Network.

Note: This paper is part of the panel presentation — *From Isolation to Networking. Cyber Homosovieticus in Search of Promised Land.*

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1 Open Society Foundation http://www.osi-az.org/faq.shtml

2 Central European University, Budapest, Hungary http://www.ceu.hu/

3 The Butterfly Effect. http://www.C³ .hu/scca/butterfly

4 Center for Culture and Communication C³ http://www.C³ .hu

5 Intermedia Department, Hungarian Academy of Fine Arts http://www.intermedia.C³ .hu

6 C3 Artist residency program http://www.c3.hu/collection/index_en.php?t=2

7 ICAN (International Contemporary Art Network) http://www.ican.artnet.org/ican/

On Translations

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Language is frequently the focus of postcolonial studies, partly because historically, language has been a functional tool of colonization. It has been argued that colonization destroys and replaces languages, cultures, communities and nations rather than enriching them. Undeniably, the wide use of English bridges communication gaps, yet simultaneously it seems to eradicate the importance of other languages. As a backlash to the burden of colonial heritage some activists advocate a return to the use of indigenous languages. In practical terms this stance, especially where technological terms are concerned, is highly debatable, chiefly because the vocabulary remains essentially un-translated. Thus we are faced both with the political and the pragmatic implications of translation. What can be done? The complexity of this unresolved question is outside the scope of my presentation, which briefly investigates the role of language including the meaning of translation into "other" minor languages. The term "translation" is commonly used for the act of rendering words into another language. In this text however, "translation" is also employed to expand the concept into a wider frame of reference to include cultural "interpretation" and "transposition" in an international context.

Translations, including cultural translations, are performed in a constantly shifting global framework and thus involve divergent, often contradictory paradigms — while raising numerous questions. Where is the real translation taking place, how is this perceived in different parts of the world, who are the actual translators, for whom is the translation done, where and how is a cultural bias employed and most importantly what is being translated? This is of course one of the most important and also most difficult questions — seemingly without well-defined answers. How much of the content is being translated might be yet another point.

In post colonial times where the scope of cross-political/economical networks, such as the European Union of eight thousand different ethnic groups speaking 5,000 distinct languages, extend across borders of nation states, the role of accurate translation is critical (European Parliament). Beyond the European continent, South Africa has for example, eleven official languages (Languages South Africa), while the Indian constitution recognizes 22 languages (Languages India), representing a vast heritage of language families. Reflecting on these few examples — the consideration of how meaning in one language can be effectively recreated in another remains a significant concern for a translator, especially as idioms in one cultural context might have entirely different interpretations in another milieu. This is of special significance as each word in a given language has semantic, cultural, and historical associations whose meaning is to be translated as a totality.

Abby Kratz argued that "words carry with them the atmosphere and rhythm of a cultural, historical, and aesthetic tradition. She noted, "formulations that express emotional states, for instance, gain a certain refinement in one language that cannot be reproduced with the same intensity in another language". Nevertheless she concluded that all acts of (cross-cultural) communication are acts of translation (Kratz). Thus translation presents a process continually being negotiated, confirmed, adjusted, and modified by practicing translators and by all who deal with translation. In this sense translation is more a cultural than linguistic practice especially as it embodies both cognitive and social expectations.

Among artists who investigate the subject, the *On Translation* series by Muntadas presents a prominent example. Since his 1995 manifesto, Muntadas publicly expressed his concerns about the transmission of information through different systems and how this process can alter, distort and obfuscate original meaning. He maintains that we live in a world, which is being constantly filtered and re-filtered.

> From language to codes, from science to technology, from subjectivity to objectivity, from agreement to war, from private to public from semiology to cryptology. The role of translation and translators as a visible and invisible fact. (Muntadas)

The *On Translation* project explores issues of identity and representation far beyond the basic function of translation. The individual modules reveal significant differences in the perception and interpretation of socio-political and cultural situations. The project also aids us to visualize the fundamental etymological, cultural and historical associations connected with these issues. This is of special importance, because as Jiang Tianmin notes: "Translation is never innocent. There is always a context in which translation takes place, always a history from which a text emerges and into which a text is transposed. Translation can create stereotypes for the Other that reflects domestic cultural and political values and can be instrumental in shaping domestic attitudes towards the Other" (Tianmin).

Minor languages represent a special challenge for translating texts. The European Parliament initiated a system of 'relay' languages: a text is first translated into one of the most widely used languages and from there into the minor languages. Other major Community languages could also become relay languages in due course. This leads me to the primary inspiration of my presentation motivated by my Hungarian heritage and the "Critique of Publishing/Publishing of Critique" workshop discussions in August 2007 at the Summer Academy in Bratislava, Slovakia. In Hungary we communicate in one of those "minor languages." According to the "Euro Languages Net Project": "Their (Hungarian) language is spoken nowhere else. Their folk songs bear no resemblance to those of other nations" (Euro Languages). No wonder that most of the professional and technical literature has been published mostly in English in Hungary similarly to many of the neighboring countries with "minor" languages. Nevertheless there have been valiant initiatives. In October 1997 — for example — the Media Research Foundation published BULLDOZER, a 220-page anthology of contemporary media theory in Hungarian. The texts have also been freely available (readable +downloadable) in the spirit of anti-copyright, on two sites including the Hungarian Electronic Library (Bulldozer). Several notable examples of critical literature followed across the region. Nonetheless when a decade later in the summer of 2007 a dozen of us gathered at the Summer Academy in Bratislava the persisting difficulties concerning professional publications were still evident. In our discussion critical issues of translation and publication re-emerged. This is a dire situation for emerging professionals, as there remains a serious shortage of available literature at academic institutions as well as commercial outlets. Furthermore there seems to be a downward trend, a negative shift since the 90s in terms of funding for translations and publications across the entire region. As literature seems inaccessible in several countries, vast areas of knowledge are completely missing and being ignored to the detriment of talented people who either are already or will be shortly working in professional jobs including the education of the next generation.

In conclusion few of the issues concerning translation are resolved today. It has been noted that languages are living organisms. Consequently it is hoped that this presentation serves as an introduction to germinate further dialogues on the issues involved.

European Parliament. Multilingualism. http://www.europarl.europa.eu/parliament/public/staticDisplay.do?id=155&pageRank=3&language=EN

The languages of South Africa. http://www.southafrica.info/about/people/language.htm

Languages of India. http://languages.iloveindia.com/

Kratz, Abby R and Kratz, Dennis M From Dean to Deantrepreneur: The Academic Administrator as Translator *Translation Review 66 (2003).*

Jiang Tianmin Translation in Context. http://isea2008.org/openconf/author/submit.php

Euro Languages Net Project. http://www.euro-languages.net/hungary/index.php?lang=eng

Muntadas On Translation. http://www.translocal-practices.net/index.php?s=adaweb

Bulldozer, Mediatheory Anthology 1997 Media Research Foundation, Budapest

Physical Facebook and User Generated Art

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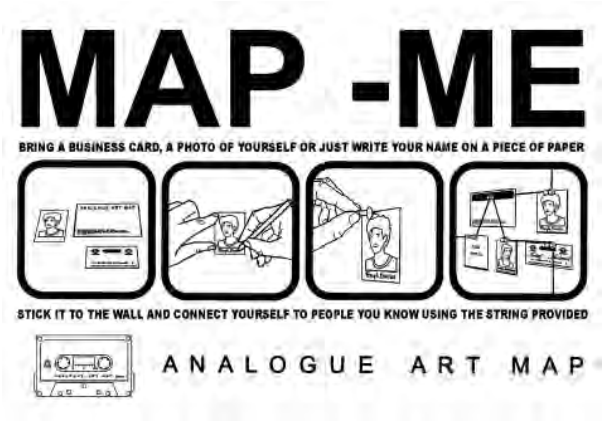
Connecting and reconnecting with other people has traditionally been an activity associated with face to face meetings. However, recent social networking environments such as MySpace, LinkedIn and particularly Facebook have given rise to new public forums that offer digital specific interactions such as posting photos, forming groups and distributing videos and music. But how do these new interactions differ and relate to traditional social exchanges in physical space?

The installation Map Me explores this issue by bringing virtually back to reality. Map Me materialises the act of networking so that the connections, the media and the people appear in real time and space.



Interaction instructions on the flier promoting for the Map Me exhibition

First, you create a profile for yourself using bits of paper, drawings or business cards. You are encouraged to bring small personal items such as photos from home but stationery is also provided for the unprepared. On completing your self fashioned profile, you can then hyperlink to the profiles of people that you know using coloured wool and drawing pins. This wool traverses the space, highlighting the invisible lines of connection between individuals, describing the convoluted structure of social architecture. The resulting installation is a spatial and tactile version of a social networking page like MySpace or Facebook. However, does this work have any implications for digital interaction?

Map Me is both a celebration and a critic of digital society. By presenting the digital and analogue combined, it also pits them against one another. Map Me prompts the audience turned collaborators to evaluate physical versus digital interaction, as they are encouraged to compare, combine and evolve rituals and tactics from both digital and physical experiences, and in doing so, playfully develop new hybrids of interaction. While often shy to involve themselves at first, participants build up confidence with each exchange and act of creativity to gradually become competitive in their inventiveness. The empowerment of the audience to expand and individualise the form and meaning of the work not only highlights the familiar keywords and axioms of the user generated generation: "personalisation"[1] and "community is content"[2] but also dilutes notions of authorship and questions the authority of the artist as creator.

From a social perspective, Map Me raises questions about the value, diversity and nature of the relationships formed in digital congregations as compared to their physical counterparts. Are connections made in physical space of higher value than those made in an online environment? Do social networking tools, UGC applications or physical networking events actually foster new communities or do they just reinforce old ones? Does the resulting network of contacts enrich our lives as social beings, or does it just supply another stage to parade extroversion and competitive individualism?

While Map Me can be read as a critical discussion of the cult and culture of online social networking applications, its proximity in content and concept to these very applications leaves it open to the same criticisms.

But there is more at play here. Through its presentation in art galleries and related cultural contexts, Map Me is regarded as an artwork that records and prompts relational aesthetics — interactions between audience

Image from Map Me exhibition at 2007 Conflux Festival, NY.
Photograph: doryexmachina

members and the artist through the work.[3] Conversely, when similar interactions occur in an online environment, they are generally considered low culture.[4] What is the nature of this hierarchy of physical over digital?

Digital art has been seen as culturally inferior to traditional art forms in many respects. Consider digital painting as compared to oil on canvas, or 3D sculpture against their real space counterparts. Yet as the world has moved from a produce to service based economy, likewise art has shifted from being object based to experience based. Surely digital technology has the potential to dramatically improve the communication and facilitate these experiences, but does it hold the same creative and cultural gravity as experiences located in the physical world? Even though the context is not artistic, can the actual interactions on MySpace and Facebook also be considered as relational aesthetics? Or is this representative of a larger perception of digital interaction as culturally inferior than analogue? What does this mean for electronic art?

1 Green, Hannah. Facer, Keri. Rudd, Tim. Dillon, Patrick. Humphreys, Peter. Personalisation and Digital Technologies. http://www.futurelab.org.uk/resources/documents/opening_education/Personalisation_report.pdf. Accessed April 2008

2 Porter, Wayne. February 27, 2008. "Reality is fake, collisions are real: Musings on Social Aspects of Media, Reality, Change Agents & Random Experiments." http://www.wayneporter.com/2008/02/27/the-summit-keynote/. Accessed April 2008

3 Bourriaud, Nicholas. 2002. ***Relational Aesthetics***, English edition translated by Simon Pleasance and Fronza Woods. France: les presse du réel.

4 Hodgkinson, Tom. Jan 14, 2008. "With friends like these" The Guardian. http://www.guardian.co.uk/technology/2008/jan/14/facebook. Accessed April 2008

Location! Location? Location!!
Can Location Neutrality Exist in Artworks?

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Introduction

This paper examines the notion of location neutrality, briefly comparing artworks that feature a locative media or location independent aspect. By examining recent artworks I will go someway towards an answer. The works examined enable the re-imagining of a place and a de-familiarisation of the familiar. Artists have used psychogeography (Debord) and technology (such as GPS and networks) to explore the theme of locality, therefore enabling a novel way of traversing these spaces. Potentially, these works can be without location and sited-specific. The problematic element in these artworks lies with the fact that they are attempting to engage simultaneously with the local (specific) and the global (neutral). The challenge these works face is to maintain generality alongside specificity. In practice, some skewing towards one or the other occurs in order to maintain legibility (i.e. Bold Street was to the local, Joyce Walks the general).

Body

In order to address the problem of location neutrality it is necessary to consider artworks that have a specific site or local-focus. These do not necessarily involve locative technology, but reference the underlying "quality" of location. See table 1 for works in an exploratory framework — from complete installation speculations to concrete spaces.

The recent work, Joyce Walks by Conor McGarrigle (using locative and web 2.0 apps) allowed users to remap Blooms (Ulysees, James Joyce) walk through Dublin onto their own city. Surprisingly it is initial issues with the application programming interface (api) that takes the works site specificity and location-neutrality to an abrupt intersection. At the launch date, due to copyright issues between Ordinance survey data and Googlemap api, users could not use the interface for generating maps for UK cities by name.

"The problem with the UK ordnance survey data — which was really between google and the ordnance survey rather then with me — affected geocoding in the api — i.e. if you searched using the Googlemap's api you couldn't find any UK city. If you knew the co-ordinates, it was ok" (McGarrigle).

Clearly, this illustrates that technology was the stumbling block to the work achieving location neutrality. Although McGarrigle considered a work around using geocoding tools, as well as complicating the work it proved to be unnecessary, as the issue was resolved by the two companies involved. (A similar problem also happened with the YASMIN mailing list for UK based researchers)

A contrasting work that can be seen to be location neutral is Agnes Meyer-Brandis's SGM-Iceberg-Probe. It connects with an imagined subterranean landscape that underlies our own. In her works, location is neutral upon a facility (e.g. ice rinks) rather than a physical location. This subterranean world is seen to be contiguous, though only through the use of imaging and drilling accessible to us. The works explore the interconnected underworld, searching for life in coresamples, icecores and atmospheric moisture. The artist pushes this to a playful extreme, producing visual evidence of icebergs in Brazil (biorama talks, DRU Huddersfield, 2007).

Tanaka's and Gemeinboeck work Net_Derive is based upon mobile phone and locative technologies in which participants relative and absolute locations in the city generates a unique musical and visual score. The artwork, generated from outside the gallery, uses the urban landscape as a musical canvas.

Blast Theories works use the city as their stage, tuned to the locality and using technology, yet still orchestrated to evoke the universal themes of angst, trust, loss and awe.

GEOcaching is a social mapping activity that considers the world as a giant treasure hunt.

Beatrez Dacosta's PigeonBlog and Proboscis's Participatory Sensing works use technology for data

collection about levels of pollution for the purpose of raising public awareness and involvement.

Discussion

Locative technology is systematically flawed even in attaining its modest proposal for an indexical idea of location. "For example GPS signals are shadowed by buildings and imperfect seams between technological systems often impact on the work" — Benford (Performing Space workshop Nottingham). Moreover, this indexical notion of space, without reference to the whole, is an experiential failure in locative technologies. Artists attempt to weave back non-indexical notions of location into the works despite the failure of the technology. Locative media is useful when used as an enabling media, to embody knowledge and insight into the local environment. Proboscis is using these technologies as a way of weaving knowledge back into the environment.

Net_Derive works to generate a site-specific language of music, rather than simply listening to pre-recorded music. It is known that walkman music listeners construct a space around them (Du Gay et al., 1997), but if the local environment location is the music generator what new spaces could be discovered?

Location aware technology may actually be the problem, promising what it cannot give, a pure sense of place. Works that rely lightly on technology are often more successful in maintaining a neutral focus in the way that a book is sometimes more vivid than a movie.

Table 1: Types of locative works

Type	Locative Narrative	Community Storytelling	World	PsychTours	playing
	Rider Spoke (2007) Blast Theory	Theirwork.org (2007) Connolly& Williamson)	Fo.AM — TRG(2004)	Shadowed Spaces (2007) Arika	Net-Derive (2007) Tanaka/ Gemeinboeck
	Day of Figurines (2006) Blast Theory	bold street (2007) FACT	Times Up! — Sensory Circus(2004)	Report on an Unidentified Space Station (2007) McHugh	Bio tracking (2007) Dimitriu
	I like Frank (2004) Blast Theory	PigeonBlog (2006) Da Costa	SGM — Iceberg-probe(2006) Brandis	TTS / PVI (2002-2005)	Active Ingredient-Ere be dragons (2007)
		Participatory Sensing (2007) Proboscis	The lake(2005) Freeman		Joyce Walks (2007) Conor McGarrigle

Locative-narrative — a story that traverses the city; Community storytelling / authorship — locative technology used to tag space; Psych tours — psychogeographical tours of the space to enable a new mapping of a hybrid space across time or literature; World Growing — facilities created that refer to another location; Playing the city — using as an instrument (references for table can be found on www.transitlab.org/papers/loc_loc_loc)

The move to open standards e.g. openstreetmap, may get around some problems with closed systems as APIs are limited in the control they enable. "But it does highlight the problem of basing a project on google maps in the end it is a proprietary system and you have to hope that it continues to fit their business model to give api access to everyone. McGarrigle (*pers comm.*)

In conclusion location neutrality does exist in some works, but that these are a special case, and overwhelmingly location is still a significant component. Technology has given us seams between the systems that need to be traversed in order to make work. It is up to artists and researchers to decide whether they ignore, engineer out, or work creatively with these seems.

Gemeinboeck, Petra.,Tanaka, Atau., Dong, Andy. 2006. "Instant archaeologies: digital lenses to probe and to perforate the urban fabric." In *Proceedings of the 14th annual ACM international conference on Multimedia table of contents.* New York: Association for Computing Machinery, pp. 279-286.

Du Gay, Paul, Hall, Stuart, Mackay, Hugh and Negus, Keith. 1997. *Doing Cutural Studies: The Story of the Sony Walkman.* London: Sage Publications, p. 105.

Works

Because of the size constraints, weblinks to the works referred to are made available online at the page transitlab.org/papers/loc_loc_loc.html

w.Book & e.Margin.
Wired Book and Electronic Margin

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Introduction

This paper aims to present the collective project 'Wired. Book & electronic Margin'. Firstly, we are going to present the objectives and general characteristics of the project; secondly, we will show the various cognitive, technological, educative, connective and informative benefits that are generated by the project, and finally we will analyse the impact of the project on theory of technology, especially focusing on the contributions of the system to e.learning methods.

Objectives and general features

The main objective of the project is to articulate the network's advances with Western cultural traditions linked to reading. There is a need to develop a new concept of reading, and of managing knowledge and data that integrates traditional legacies deeply embedded in our collective imaginary and culture with emerging social changes in order to overcome the limitations of fixed reading of text and accessing of information on paper. We still need to develop an ubiquitous and extended environment for a bottom-up interacting and sharing of information that integrates the analogical frameworks into digital environments.

One of the advances in this direction came from electronic books. However, although e.books give answers to part of our needs other aspects of the tendency for ubiquity, mobility and interactivity remain uncovered. Although electronic books introduced changes in text reading and comprehension they are not as profoundly inscribed in the Western culture as are books-on-paper. That unequalled historic feature and advantage of books-on-paper could be used to enrich electronic processes of reading.

In order to achieve that it is necessary to technically extend the reading of a traditional paperbook and transform it in a paper interface for computer-aided reading. In this direction we developed the WiredBook system. A wiredBook is a traditional book on paper but connected to wired resources via tag-embedded technologies, that is to say, a traditional book tagged with specific codes that tries to make the most of the cultural intimacy Western culture has developed with the experience of reading on paper, an experience that, although lacking the fluidity of an e.text, is still closer to the human experience than reading from a screen.

It is a product of Cybrid Design. The concept of Cybrid Design comes from the mother-concept of Cyberdesign (de Kerckhove,1995:89), and can be understood as design that combines analogical and digital media, or augmented reality. That is a hybrid situation in which a physical object is connected to the virtual reality, so a w.Book is a cybrid object of design.

A wiredBook is a hyper-node, an interface to the virtual dimension of the book. The virtual dimension of the

book is made out of two parts (1) the electronic Book and (2) the electronic Margin.

WiredBook's virtual dimension: e.Book + e.Margin

The electronic Book (e.Book) is the book's electronic literal version, a virtual copy of the paper book in all manners similar to the printed copy but accessible to and from the e.Margin. The e.Margin is the virtual place where all the benefits from Internet can be inscribed (the author's process of work, multimedia files, updates and new editions, comments on the book, chats, etc.), as the virtual 'treasure' of the book.

Compared to wiki processes, the difference between the wiredBook system and wiki system is that when we add an item in the e.margin, in the place where someone had previously inserted another one, the previous data is not substituted by the new contribution. New data enriches the e.margin but does not take the place of existing data creating bottom-up created and collectively shared dynamic layers of contents.

In that sense the WiredBook system is a bottom-up vehicle to jump from data to metadata because in its core there is no definitive links between people, items and tags. The informational objects (tags) trigger the classification of other informational objects, enabling

Table 1: Paper, electronic and wiredBook

Paper book:	**Electronic book**:	**WiredBook:**
1. Analogic soport	1. Digital support	1. Hybrid support
2. No electronic device needed	2. Electronic device needed	2. Multi-devices, non necessary
3. High emotional rapport	3. Low emotional rapport	3. High emotional rapport
4. Extended distribution	4. Narrow distribution	4. Extended distribution
5. No possibility of expansion of contents (only bibliography and notes)	5. Predesigned limited expansion of contents (apart from bibliography and notes)	5. Bottom-up organized expansion of contents
6. Personal reading and access without specific interaction	6. Collective reading and possibility of introducing changes	6. Highly interactive collective and connective reading
7. No possibility of updating (a final product)	7. Possibility of updating (not a final product)	7. Automatic updating, dynamic product.

WiredBook, wiki processes and web togetherness

The wiredBook process starts in the paperbook that is tagged with a code. With a mobile device we take a picture of QR-Code or browse the wiredBook website and enter the code. With this code we access the digital version of the book and the "electronic margin" of the printed text. Then we can browse all related resources and add our own.

Users either can add texts, links, notes, comments, files and media, uploading them directly in the platform, by means of external links or browse the entire book and all the media items inserted in the e.margin, that is to say, have access to pictures, videos, soundfiles and geo-referentiation.

users to share their knowledge contents and their tags in an environment of web togetherness. In such environment open groups are organized in graded folksonomies (from narrow to broad).

Transforming e.learning into wired. learning

These benefits from wiredBook system can have a special impact on traditional methods of e.Learning because it creates a hybrid analogic-digital environment that enables the digital and electronic interconnection of any analogic paper resource, overcoming the limitations of a fixed reading of a text on paper. In this sense the system can be used to create a constant follow up of all data, to construct experimental online laboratories, to organize synchronic and asynchronous sessions of collaborative and connective research and workshops,

to link communities of study for georeferentiation and thematic common affinities and to extract and systematize results that can be applied to other fields of knowledge. In the same sense wiredBook is a system that enables the personalization and framing of contents for distribution and feedback, a hybrid managment of information that offers possibilities for navigation, analysis, tagcloud, statistics, filters and editions.

Once the concept of e.learning is expanded into the concept of wired.learning it will be possible to (1) trigger new forms of the educational use of reading and stimulate new forms of consciousness, (2) complete educational text books with multimedia images, sounds and images in movement and (3) to bring children back to reading, making the most of their attraction for multimedia images.

While in web.learning (traditional e.learning) we can observe (1) one-to-many and one-to-one formative processes, (2) interactivity limited to a digital framework, (3) distance-learning collaboration (global environment), (4) low perception and difficult construction of a personal digital identity, (5) top down organization and distribution of knowledge and information, (6) hierarchic and graded model of distribution, (7) updating of available resources exclusively on-line and (8) find useful results for personal evaluation of participants, in a wired.learning environment new features can emerge. Among these we can see (1) many-to-many formative processes, (2) inmersive interactivity in a hybrid framework, (3) georeferential collaboration (glocal environment), (4) high perception and easy construction of a personal digital identity (5) bottom-up organization and distribution of knowledge and information, (6) semantic and connective model of distribution, (7) analogic (paper) and electronic updating of resources by w-code, (8) useful results for personal evaluation of participants and able to be organized for collective distribution.

Conclusions

WiredBook is a system that allows for the continuity between didactic traditional channels and new media offering a support for students to manage their own formation.

The system makes it possible to have access to a hybrid dimension (analogic and digital at the same time) and to apprehend and perform a collective and connective dimension in the exchange and accumulation of knowledge. Students can connect to electronic texts, all kinds of media contents, collaborative writing researches, forums, hypertexts, streaming and collaborative works, while concomitantly keeping a personal profile and identity.

There are many practical and theoretical consequences derived from the wiredBook system. The most importants are linked to its capacity to intensify, and make the most of two human experiences: (1) reading a book on paper and (2) taking full advantage of the already built experience of receiving information through multimedia images. Apart from that there are information, reading, and connective benefits, (1) to integrate multimedia files in a paper book (for art, theater, medicine, engineering books on paper, etc.), (2) to expand the shelf life span of books and information, (3) to unify the cognitive structure and organization of information in a hypertinent way, (4) to complete the cycle of information between two dimensions, the material and the electronic virtual, (5) to add fluidity and real time to paper books, (6) to extend the presence of books, (7) to transform the experience of reading a book from a one-way to a multiple way process, (8) to empower the reader of a paper book, (9) to increase the process of externalizing personal internalized reading (de Kerckhove, 1995), (10) to extend thought processes and shared consciousness, (11) to add to technological convergence, (12) to increase the scope of use of other technologies, (13) to insert the paper book in the context of connected intelligence, shared on-line knowledge, and (14) to use the power of Social Networking.

Practical applications are especially linked to editorial projects in which there is a need to expand and update already printed books, and also to packging and advertising like cross-selling, promotions, labels, crowdsourced marketing and web developments.

Theoretical epistemological benefits are created in relation to net-folksonomy and bottom-up classification. In a dimension of knowledge distribution in which everything is collectively shared, data organization depends on users not on hierarchical pre-designed structures. Information integration is granted by the wiredness of different devices that create an integral system shared both by real life and virtual environments. The whole system enables the acceleration of processes of social networking, a new way to manage knowledge in the era of tag.

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PPS: PublicPrivateSpace
Where the public space turns into private space and the private space opens up to the public

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What happens when our private life becomes public and we use the public space for our private concerns? What happens with the way we communicate, socialise and relate to each other and to the space around us? What happens when technology becomes invisible and disappears from our awareness? What happens to our autonomy? Who still has agency? These questions come up when we think about our relationship and the changes that have occurred over the past years where our environment has increasingly shifted towards the intangible: from mobile devices such as telephones, game controllers and GPS to CCTV systems and electronic tags (RFID) for travel and products. These changes have affected our experience of location, space and geographical positioning on a personal and global level in both a digital and physical way. Moreover it poses questions regarding the relation between our private and our public space.

Buildings are generally intended to last, through turnovers, wars, political changes, and the retrofit of new technologies. Buildings are sturdy and solid entities that without deliberate destruction are hard to change. Even though their form and appearance has developed over the centuries they retained their basic function as barriers against the outside. From the time that buildings were first defined as private spaces, the space outside almost automatically served as a public space. Public space referred to the streets, squares and parks of a city. The term public space was a symbol for the spatial and cultural aspects of urban life. However this particular space has not been as fixed as the buildings around it. From the marketplace in the Middle Ages, to the Coffee Houses in the eighteenth century and the publicly accessible libraries and shopping arcades in the nineteenth century to last centuries malls and other main commercial centres. The public space turns out to be an autonomous zone that throughout history continuously changed its nature. Nevertheless the meaning of public space has always been quite constant – a signifier of a space in which views and opinions could be shared with others. In other words a place where groups of diverse cultures, lifestyles, and ideas meet and exchange ideas. At the moment an interesting turn is taking place. The rise of digital technologies has changed our ways of communication. Sociologist Manuel Castells characterised this period in time as a network society, not a new phenomenon but more pervasive than ever because the information technology paradigm secured an expansion throughout the entire social structure.[1] These technologies, from iPods to mobile phones and GPS receivers, have a large impact on our feeling and use of spatial dimensions, leading to the observation that the area of our cities is no longer determined by physical space alone. Moreover they transform our public space into a private space and vice versa.

Today the public space is most present on the internet. Through blogs, social networking sites and other online tools, people exchange ideas and public opinions are formulated. The contemporary city has moved into virtual space. A virtual public space that enables forms of sharing and exchange that was previously unimaginable. By extracting data from different blogs to create and form new stories and entities or through exposing images of CCTV cameras in commercial shops and private houses artists like Jonathan Harris, Michelle Teran or groups like MediaShed have pointed to the consequences of this shift from that what is private to what is now being made public.

At the same time where the private has become public, the public space is used as a private space. Electronic devices like mobile phones, GPS and other tracking devices personalise and privatise the public space. The mobile phone is the most interesting example of the changing status of public space. On the one hand the advanced mobile phones like the iPhone with integrated MP3 enables one while using headphones to move through a city without getting involved. More importantly, the use of these devices for making conversations fortifies the turn from public space to private space. By making private conversations and ignoring the other people around them, the mobile phone users cause a demise of public space by actively occupying the space for personal and private conversations denying the people around

them and building their personal bubble. These new ways of communication created new forms of privacy within public domains. With their project *Interactive Burka* Karen Lancel and Hermen Maat are presenting a new way to open discussion and debate, this time around the notion of being invisible in public space. Lancel and Maat are well known for their interactive installations and performances in public space where they confront people with questions about their digital media usage. Their present work *Interactive Burka* is a metaphor for the commotion in the Western world around the issue of being publicly invisible. Stories from different people can be heard by touching the delicate fabric of the burka. The stories that can also be added by the public deal with (in)visibility, transparency, security, privacy, trust, intimacy, the desire for an uncontrolled and unmediated space, etc. The installation is placed in public space as a playzone that hands the public through touch a poetic and visual interface, a way to deal with social, emotional and political conflicts that dominate the discussion between visibility and invisibility.

Another tool that changes our connection to the space around us is GPS. For a long time now our experience of the city has been influenced by various media, information and communication technologies. But apart from merely walking within a mediated world we are now also actively interacting with the space not through tangible cues but by making use of the ubiquitous technologies. With the arrival and popularity of location-based technologies a shift occurred from the material cues to immaterial virtual signs by which we navigate the streets. A new hybrid space is formed in which we are constantly moving between the virtual and the actual. Questions arise that address the notion of agency, the status of private and public life and the interlacing of virtual and actual worlds.

Many artists working with locative media focus and underscore the underlying structure and working of the techniques without questioning them. By creating geospatial narratives, games or walks these locative media projects tend to evoke (forgotten) histories and memories rather than enforce actions. While remaining in their own established social networks they at best make social-spatial relations visible. But there are also artists that try to find the opacities in the systems and by highlighting certain hidden or forgotten aspects they reclaim the urban space. Yolande Harris investigates in her project *Sun Run Sun* the split between the embodied experience of location and the calculated data of position. Harris questions some of the fundamental issues underlying the "efficient" and "functional" GPS data: what is inside and what is outside, what does it mean to be located, what to be lost? Whereas the GPS system negates one's relation to the environment, Harris encourages the listener to re-asses and to renegotiate their connection with the actual environment. By taking the different data from satellites and translating them into sounds *Sun Run Sun* delicately treads a path between technical data and actual experience, between the artificial and the natural.[2]

Interactive Burka and *Sun Run Sun* are focal points in the shifting conceptions of private and public space. They create a place for encountering difference and creating discussion or provide a space of resonance and meaning, by emphasising and renegotiating our position with and within our immediate surrounding.

These projects address the social dimension of human environments and possess qualities that make the communication of interaction visible in the realm of the public/private sphere. Moreover they reflect the essence of what is meant by "ubiquitous computing" and its effect on the changing relation of the public and the private space. Through artworks like these it will become possible to formulate and discuss our understanding of the specificities of location, which is mediated along political, aesthetic, social and scientific lines.

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1 The One-dimensional Network Society of Manuel Castells, a review essay by Jan A.G.M. van Dijk. http://www.thechronicle.demon.co.uk/archive/castells.htm (last viewed April 25th, 2008).

2 The specific use of sound resonates the origin of communication and demarcation of space. David Dunn remarked during the discussion "Navigating the Space of the Future" at the Netherlands Media Art Institute, 15 April 2008 (http://www.nimk.nl): "Music was in a fundamental way, defined and structurally coupled to the physical environment. Sound was a modality of communication. In many ways there seems to be a recirculation that started in the earliest time when we used sound to communicate and perceive our environment as a way of coupling to the external world. Little by little we have narrowed that down to this cultural form, and now we come back to the most ancient modality of listening through technology."

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Block H & Reality Jamming:
Conflict Reporting via the FPS Game

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News broadcasts, particularly those depicting conflict, now share the same spectacular aesthetics as first-person-shooter video games. Where video games once took their visual cues from conventional media, now 24-hour television news employs the same 3D simulations of battles, animations of weapons, and diagrammatic re-enactments using military satellite mapping technologies. One intended result may be a more immersive or entertaining experience, but an unavoidable consequence is the virtualisation of real life terror. James Compton recognises that this 'experience of war is, for a majority of Western citizens, limited to spectacle,'[1] where we are fed a myopic view of conflict which has been sanitised and simplified. When considering the media's use of the terms "terrorist" and "freedom fighter" we realise that they are both arbitrary and context-specific. The disparity between the agendas of Fox News and Al Jazeera News suggest that audiences must be allied with one or the other. In response to a since defunct British censorship act, political dissidents were re-voiced by actors in news broadcasts during The Troubles in Northern Ireland, making it obvious who was good and who was bad. With varying degrees of subtlety and visibility, modes of surveillance, propaganda, and control are manifest in every country and sitting room declared "free" or otherwise.

Christopher Douglas notes that games can offer us a sense of the ideology of fairness, where players begin in relative equality — unlike real life where many differentiating and determining aspects of one's life are established before birth 'including social and economic standing, political freedom, skin colour, gender, etc.'[2] Broadcast news infers such parity and balance between opposing sides of real world conflicts, a 'virtuous war'[3] has been created where both technological and ethical superiorities are promoted, leading to a situation of hyperreality that serves to alienate us further from the actuality of events, as our emotional responses are blunted our capitulation is assured. Baudrillard believed that the modern world operates within the void of simulation where it is impossible to tell the difference between the real and hyper-real. Wars take place not on the ground but rather in our domestic arenas via the safety of detached mediation. Civilian casualties become 'collateral damage' as distant destructions are experienced through game-like crosshairs. These bloodless wars run parallel with FPS games such as *America's Army. AA:Special Forces* has used the experiences of nine soldiers who served in Afghanistan or Iraq in an attempt to bring a greater sense of the "authentic" into the virtual. This purported realism is contradicted by the notable lack of blood and carnage within the game.

In contrast to Baudrillard, Virilio prefers the term 'substitution', stating that 'reality has become symmetrical. The splitting of reality in two parts is a considerable event which goes beyond simulation.'[4] It is the more captivating qualities of the virtual that substitute rather than obliterate the real. This coercion through the militarisation of public and private technologies has resulted in a crisis of perception, where we rely on the singular inarguable viewpoint maintaining the dominant ideology.

Games like *AA* or indeed *The Night of Bush Capturing* provide 'a bold and brutal reinforcement of current society and its positive moral perspective on military intervention, be it the war on terrorism or "shock and awe" in Iraq.'[5] *Block H* provides a parallel experience in a Northern Irish context.[6] For an Irish or British player in particular, it forces the question of whether fact-based games trivialise the circumstances they depict. The mythic narrative does not have to wait for the past nor the present. Games are reaching a point where they can integrate history in virtually real time. They exist somewhere between Baudrillard's hyperreal society of simulations and Virilio's concept of pure war, determined by the increasing speed of communication combined with the continual advancement of technologies; leading to new configurations of our control of space and time. *KUMA\WAR* is based on real world conflict situations set in Iraq and Iran. New missions are made available weekly as 'game-isodes'. Scripts are based on news reports, real-world audio and video clips are mixed with their own generated content. Video games impersonate television newscasts, which now ape video games.

Choices are integral to the narrative of video games. This decision making process appears to be what mainstream media fears most, but is what we choose in a video game any more dangerous or indicative of our character than our selection of books and films? The games industry has discovered a willing user-producer audience eager to modify and further develop their platforms. When considered alongside the proliferation of the multiplayer phenomenon, this suggests that the intellectual capacity of games is deepening primarily through the expansion of the interface between local and networked elements.

Northern Ireland has had a turbulent past with many violent and bitter ethno-political conflicts 'predicated on religious affiliation, but centred on split issues of national determination.'[7] Based around the sectarian divides that still exist within Northern Irish society, *Block H* facilitates participation in a specific conflict situation. By emphasising the cultural elements of the environment the interchangeable characteristics of opposing rhetorics are laid bare.

Bogost's theory of 'procedural rhetoric' within video games can be successfully reinforced with reality jamming, where 'the practice of persuading through processes in general and computational processes in particular'.[8] In *Block H*, reality jamming takes its form is several ways. The game scenario utilises real world photographs of murals and icons which are condensed into a smaller self-contained arena. The sanctioned and unsanctioned murals of Northern Ireland act as communal propaganda that dominates the game world. The *Block H* interior is flanked by game projections of opposing teams on the side walls, evoking an oppressive atmosphere that channels the visual influences of conflict by echoing the real world visual rhetoric of the murals. The sound reactive television in the centre loops and mixes various combinations of opposing ideologies, obfuscating the deterministic properties of each, resulting in recognition of the similarities between conflicting sides, blending political, private, and public ideologies.

Can we go beyond our 'willing suspension of disbelief for the moment'[9] and grasp at the gritty realities that lie hidden beneath? It is possible to address issues in new and constructive ways through games by employing alternative environments and narratives that enable us to question the broader contexts of events in society beyond the current counterfeit dichotomies of good and evil — to enter a world filled with 'grey morality with nuanced perspectives of suffering, vengeance, horror, and reflection.'[10]

As Waffa Bilal states that 'it is our duty as artists and citizens to improvise strategies of engagement for dialogue.'[11] It is crucial that creators 'make it possible for players to deepen their understanding of the multiple causal forces that affect any given, always unique, set of historical circumstances.'[12] As players become secondary creators, the game's response to its user becomes more swift and profound. We must concentrate on the human nuances and not just factual minutiae gleaned from Associated Press. As Galloway notes, realism requires 'a more-or-less direct criticism of current society and morals'.[13] We must endeavour to disseminate and produce our own versioning of events and histories dynamically in this newly non-linear world.

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Urban Culture as Interface Culture: Locative Media and the Concepts of 'Dwelling' and 'Public Sphere'

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I would like to address the concept of locative media from the perspective of urban culture. How does the emergence of locative media change our understanding of urban culture, and the related concepts of 'dwelling' and 'public space'? Are we moving from a 'BLVD-Urbanism' towards an 'MSN-Urbanism'?

I have coined 'BLVD-Urbanism' — named after life on the new boulevards of early modern Paris described by writers such as Baudelaire and Benjamin — as a way to generalize a number of theories on urban culture that have arisen over the last century. These theories — starting with the Chicago and German Schools of urban sociology up to current urban complexity theories — approach the city as a spatial 'organization of differences'. The mechanism behind this 'sorting process' differs from theory to theory. The Chicago School saw evolutionary ecological forces at work (Sennett 1969). Others see the city mainly as a superstructural effect of the logic of capitalism (Harvey 2005). Others again try to understand the city as an 'assemblage', a complex phenomenon on a higher level that arises from the many interactional processes of individuals and institutions on a lower level as well as through feedback processes between these levels (De Landa 2006).

What these theories have in common is that generally they describe the city as a 'situation' or an 'interface' that brings these differences together. Whatever the sorting mechanism, the modern city is an amalgam of people with diverse backgrounds and different identities, lifestyles and goals. Subsequently, this 'situation' has an impact on the subjectivity of those involved. It produces social class or forges (sub)cultural identities (Fischer 1975). It liberates from tradition or alienates, creating footloose individuals or even criminals (Boomkens 1998, 2006; Sennett 1969). At the same time the city also creates a spatial 'interface' that forces all these differences to relate to each other. It 'domesticates' these differences and makes the whole liveable (Susser 2002; Sennett 1970).

Three types of space are produced in these processes. Public space is the place of (identity) politics and performance, where subjects show themselves, where they learn how they are different or similar from others, where they forge new alliances and relate to each other. Diametrically opposed is the private space of dwelling or the home, where the subject can retract himself from the differences that make up the city. Sometimes a third category is brought up: parochial or institutional space, the spaces that are claimed and marked by a certain group or institution where group rules determine behaviour and deviant behaviour is frowned upon.

Very often BLVD-Urbanism is not just a descriptive theory on the production of the city but also an ethical one. Take for instance this quote from Richard Sennett:

> Cities have the potential to make us more complex human beings. A city is a place where people can learn to live with strangers, to enter into the experiences and interests of unfamiliar lives. Sameness stultifies the mind; diversity stimulates and expands it. (Sennett 2001)

To sum up, BLVD-urbanism is the idea of the metropolis as a place where people with different identities live together. Traditional ways of life are exchanged for a more free floating modern experience that is both exciting and threatening. A well functioning urban society cannot do without these public spaces. Yet, the mere existence of these spaces are not enough. It also requires that citizens do not get entrenched in their defensive dwellings. Nowadays, many critics fear that this BLVD-urbanism is under attack and threatened by four major cultural shifts: an attitudinal one in which citizens become consumers, an economic one from public space to privatized commercial space, a paradigm shift in design from space to non-space and a social shift from the ideal of inclusive community to excluding 'tribes'.

Yet what is striking about most theories on BLVD-urbanism is that they still are primarily *spatial*. Even if they include immaterial constructs such as the logic of the 'space of flows' as the driving sorting mechanism

of urban culture, the 'situation' or 'interface' of the city is still seen as a mainly spatial one (Susser 2002). I would argue that we need to extend this idea of urban culture with the notion of 'hybrid space' as theorized by De Souza e Silva: 'a conceptual space created by the merging of borders between physical and digital spaces.' These hybrid spaces are not constructed by technology itself, rather, 'It is built by the connection of mobility and communication and materialized by social networks developed simultaneously in physical and digital spaces' (de Souza e Silva 2006). With the advent of mobile and locative media the experience of the city is not merely spatial any longer, and this has consequences for the way we theorize and understand private, parochial and public space. We need to think of urban culture in terms of what I have called MSN-Urbanism. Our experience of urban space should be understood as a combination of a physical situation – the urban interface — and a mediated experience, through the interfaces of mobile or locative media. The mobile phone, Ito et. al. conclude, 'is a membrane between the real and the virtual, here and elsewhere, rather than a portal of high fidelity connectivity that demands full and sustained engagements' (Ito, Okabe, and Matsuda 2006).

Thus, locative and mobile media enable their users to retract in private or parochial 'telecocoons' while in public or to 'tame' the wilderness of public space and domesticate it with one's own soundtrack or social environment (Ito, Okabe, and Matsuda 2006; Bull 2000). Identity has become not only a matter of physical performance in public and parochial spaces, but also of display through profiles on social networking sites. Physical parochial spaces are connected to virtual social networks. Search or 'discovery' algorithms allow the subject to organize the space around them in identifiable categories or to forge new contacts. They might lead to the formation of new reputation systems and the formation of smart mobs (Rheingold 2002). These can be used both in progressive ways to forge new political alliances as well as in restrictive ways, in which 'software sorting cities' electronically deny or de-prioritise access to those without the right qualifications (Graham 2005; Graham and Marvin 2001).

Home is no longer a secluded place to retract into from the wild and dangerous city, a place to foster one's private identity. Rather the idea of 'home' should be understood as a mode of being. It means 'feeling at home' or 'making oneself at home' through the use of digital technology rather than being at a certain location that bears one's home address. The boundaries between being in public or in private soften. It is not so much where you are, it is more like being on MSN or Skype: a green icon means, 'I am up for a chat'; a red one says, 'don't disturb I am not really here.' Systems like this combined with all sorts of social software might reinvigorate public space and provide new ways for experiencing and demarcating physical space. But it could also undermine the whole concept of a public sphere, if users will start seeing the city no longer as a possible community of strangers but as a range of services they can or cannot consume, and where the production of those places is solely geared towards those consumers and their consumption patterns.

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Biography

Martijn de Waal (1972) is a PhD-candidate at the department of Practical Philosophy at the University of Groningen and the department of Mediastudies at the University of Amsterdam. Het also works as an independent writer and researcher. Recent publications include 'From Medialandscape to Media Ecology. The cultural implications of Web 2.0' in the Dutch magazine *Open* (2007), and 'Powerifications', a contribution to *Visionary Power. Producing the Contemporary City* — the official catalogue of the International Architectural Biennale Rotterdam (2007). He participated with the exhibition 'Greeting from Pendrecht' in the Biennale of Architecture of Urbanism in Shenzhen and Hong Kong (2007). He is also the co-founder of TheMobileCity.nl, a weblog and a conference on locative and mobile media and urban culture. Contact: www.martijndewaal.nl martijn@martijndewaal.nl

Body Tailored Space:
Experiments in Evolving Spatial Interactions

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Abstract

The way we perceive built environment is through our own physicality — through our senses and through our body's interactive movement, therefore I argue that an aesthetically more stimulating physical experience of a building will be produced if an effective connection to space through a more multi-sensory approach to architecture is recognized. This would be possible in a time-based architecture, where systems rather than pre-determination, that will propose through trial and error new spatial interactions that evolve their own performance while negotiating with human and synthetic systems. The methodology for supporting this hypothesis is executed over a design experiment that explores how architecture could enter into a dialog with its inhabitants and surrounding environment.

Introduction: developing a model for evolving spatial interactions

What I am interested in creating is a model (Figure 1) that describes the rules for generating evolving behaviours in architecture not the behaviours per se. The rules are constant but the outcome of the results varies according to the participant's feedback, environmental inputs and materials. It is my intention that the behaviour-making process will be part of the system itself or in other words that the system can evolve its own goals through a learning process. The purpose is to create conditions where the built environments are able to discover for themselves, ways of attracting and keeping the attention of its inhabitants.

A participative model of interaction should:

- create behaviours to get the maximum attention from users;
- modify its behaviours according to feedback; and
- evolve by suggesting new behaviours according to feedback.

Body tailored space: a design experiment

"Body Tailored Space" (Diniz 2007, 2008) is a physical performance space incorporating computer vision motion tracking, and real time sensor-actuated interactive membranes. This project looks into issues of embodiment as a way of stimulating the physical response of

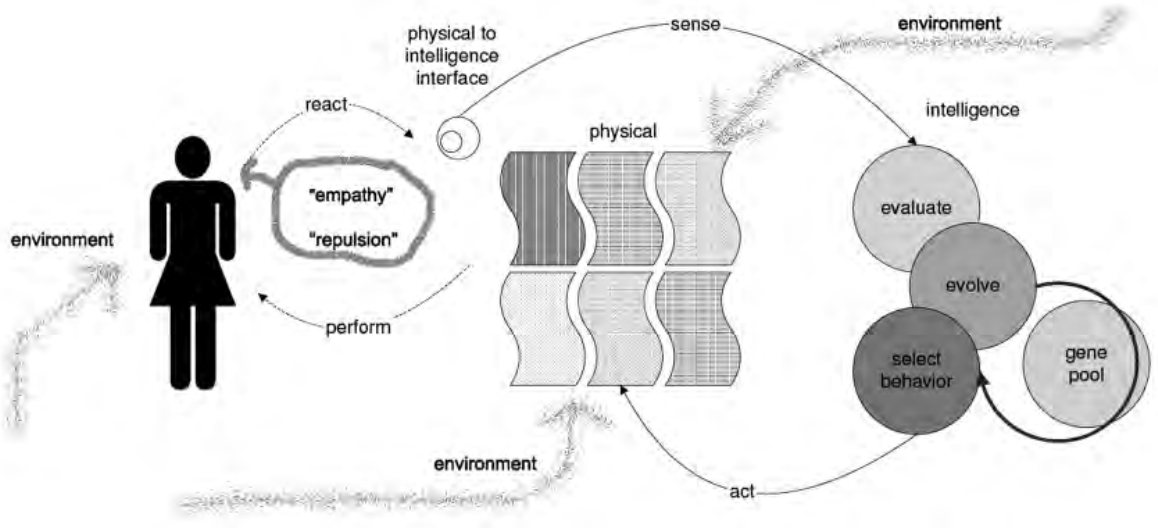

Figure 1: Sketch of a participative model of interaction

Figure 2: Membrane of "Body Tailored Space"

interactive surfaces. The system (Figure 2) continually senses the movement of performers and responds with a physical manifestation on the surrounding membranes. The membranes are controlled by a set of machine learning techniques that start to adapt and predict movement, not just reacting but suggesting movement creating a "give-and-take" relationship between body and space. The prototype's behaviour is the result of a system composed by sensors, microphones, web-cams, shape memory alloys actuators, and a genetic algorithm (GA) component. The dynamic of the system is made by levers actuated by the smart memory alloys (flexinol), different types of materials and textiles shaping the membrane, sound sources and LEDs.

The input actions of the users and the environment are inputs for the genetic variations. The main sensory unit is a web-cam and a video analysing program that determines the empathy or repulsion regarding the current skin behaviour by noticing at any given time how close the viewers get to the wall. These inputs change the behaviour of the prototype in shape, trigger motion and light and create patterns on the membrane.

The material should respond to "empathy" and/or "repulsion" from local and remote inputs. A wide range of possible behaviours can be generated, and are evaluated for their "fitness", based on some formally specified criteria. The wall begins its learning phase, by running a random set of behaviours (raising and lowering levers to form patterns), and will try to adapt its effect sequences to get the maximum "empathy" responses.

Conclusions and future work

The concept of this experiment is very inspired by the concepts of Gordon Pask (Pask 1976) and his ideas during his collaboration with John Frazer (Frazer 1995) at the Architectural Association. They very much argued that the central task of architecture is to provide opportunities for spatial enjoyment and unexpected interactions through specific materials and emergent interventions in the physical environment. Embodied systems are constantly being designed and re-designed through the interchange of information with the environment and people (Dourish 2001). These approaches to interactive design I believe hold exciting potential to generate interactions beyond the preconceived visions of the original designers, and create systems able to evolve to changing contexts over the lifetime of architecture. With this experiment I tested possibilities to enhance and broaden participatory levels and not just reactive levels of adaptation in space. The behaviour-making process is part of the system itself or in other words, the system can evolve its own goals through a learning process.

This model of interaction would make possible the creation of systems that have the capacity to store and react to information, exhibit behaviours, evaluate signals to display or inhibit behaviours, thus exercising "judgment and intentionality". Space within an embodied interactive approach is to be perceived not as an abstract and neutral space, but as space of "***lived experience***".

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Conditions of the Imaginary in Virtual Worlds

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A pivotal concern surrounding the recent growth in Virtual Worlds, and a question this paper explores, are the locations and conditions of the imaginary when moving between real and virtual space. Drawing from eastern and western philosophy it tests definitions of the virtual and the imaginary against the backdrop of the virtual world of *Second Life*, created by Linden Lab. Launched in 2003 with barely 1,000 users (Rymaszewski 2007: 5), the number of users with an account has grown to over 13 million.[1] Following the logic of the 'real' world, it follows most of the rules of our space, providing earth, sky, water, gravity, day and night, moon and sun within a three-dimensional networked grid. Experienced through an avatar representation many users choose to represent themselves in human form.

Visualization and embodied experience

With an emphasis on embodied experience in virtual worlds, parallels can be drawn with yogic practices, and in particular, the practice of Tantra. The imaginary landscapes generated by visualisation practices and meditational techniques such as those in the Vajrayana tradition of Tibetan Buddhism or from the Hindu Tantric tradition, are deliberate in their virtuality. With their focus on the particularity of the image these landscapes are not intended to be materialised; their pristine and deliberate virtuality is used as a tool for developing and transforming the body and mind. In the final stage of Tattwa Shuddhi, a tantric practice of inner purification, you are guided to visualise "a vast red ocean with a large red lotus on it. Seated on that lotus is the form of Prana Shakti. Her body is the color of the rising sun, and is decorated with beautiful ornaments" (Saraswati 1984:100). Of the relationship between the body and mind, the Dalai Lama writes that even in:

> Extremely subtle states of consciousness, the mental state must have a physical base, however subtle it may be. Sometimes there is a tendency among Buddhists to think of these very subtle states of consciousness as if there were no embodiment or material basis for them […] the brain is the basis for all cognitive events. Without the brain there is no cognitive function of the mind. (Harrington 2006:96)

In Tattwa Shuddhi rapid progress depends on the tantric aspirant's ability to apply a detailed process of visualisation. Although:

> This imaginative and creative inner visualization which tantra emphasizes, is not chosen at random, but is deeply related to, and based on, the world of the psyche, which is a world of symbolism. (Saraswati 1984:78)

Of the Vajrajana tradition the Dalai Lama explains that whilst the contemplative texts of the Sutra system acknowledges the cultivation of heightened awareness in relation to two senses, visual and auditory perception, the other senses are not considered. Drawing parallels with modern technologies, he comments that:

> You can project images on a television screen, or you can project sounds through radio waves, but you still cannot transport smell and tactile sensations. But in the Vajrajana tradition […] there is an understanding that it is possible for advanced yogis to gain mastery over these physiological elements. Those bodily energies that are normally confined to the function of specific sensory faculties can actually be co-opted or transferred. (Harrington 2006:97)

Does the interface with new technologies give us a glimpse of the effects of the co-opting or transferring of our sensory facilities as suggested by the Vajrajana tradition? Does this translation of the senses occur when we interact with virtual worlds?

Figure 1: Wanderingfictions Story, the author's Avatar in *Second Life* (2008)

Tele-presence and the Imaginary

The new imaginary from virtual worlds is a continual interplay between, and stimulation from, both image and presence. When we interact with virtual worlds we can experience the world as embodied presence but also as an absence. This tension pushes and pulls, contracts and expands. Previously, critics have often tried to define this in terms of immersion, interactivity and theories drawn from other disciplines such as the Deleuzian concept of the Fourth Wall. It has been only recently that this has been investigated in terms of theories of the imaginary, or expositions of the imaginary through the medium itself.

Toni Dove, an interactive performance artist who uses responsive interface technologies, describes the charged space of tele-presence as, "the space through which the body extends itself into the movie or virtual space. It is the invisible experience of the body's agency beyond its apparent physical edge" (2002: 210) (Figure 1). Does the body have an imaginary of its own?

Philosophies of the Imaginary

Writing in 1940, Sartre puts forward a philosophy for the imaginary based on our being conscious of the world and the objects in the world in a particular way. For Sartre "the two worlds, real and imaginary, are composed of the same objects: only the approach to these objects varies" (1940:57). Kearney elaborates further: "the image and the percept are not therefore different objects of consciousness; they are different ways of being conscious of objects" (1998:57). Sartre sets out four modes in which the imagination posits its objects; as non-existing, as existing but elsewhere, as existing but absent, as neither existing nor non-existing. Testing Sartre's theory of being conscious of objects in a virtual world, do they come under the term of non-existing? If we place them in the category, existing but elsewhere; that posits that the objects exist and that *Second Life* is a particular place, just not 'here'. Massumi suggests that imagination is the mode of thought that is most suited to the virtual. And further:

> Imagination can also be called intuition: a thinking feeling. Not feeling something. Feeling thought […] Imagination is felt thought […] the mutual envelopment of thought and sensation, as they arrive together. (2002:134)

Is there an imaginary experienced as sensation, as well as image? Is there, then, a sense imaginary? This concept has echoes in the Dalai Lama's view of the relationship between the body and the mind and supports the suggestion that there are new dimensions of experience emerging and a complex and multiple imaginary operating when interacting with virtual worlds. My continued research, therefore, aims to develop a new theory of the imaginary in light of virtual worlds.

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Elements: Art and Play in a Multi-modal Interactive Workspace for Upper Limb Movement Rehabilitation

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Introduction

This paper discusses an arts and science research collaboration to design a multi-modal interactive workspace titled *Elements*. The *Elements* workspace aims to aid clinicians rehabilitate upper limb movement in patients with Traumatic Brain Injury (TBI). TBI represents a significant health issue for Australians with approximately 2% of the population living with disabilities stemming from cerebral insult.[1] Young adults are at particular risk with the peak age of incidence in the 15-24 year range. The cost of disability is estimated to exceed $3 billion per year in Australia.

TBI refers to a cerebral injury caused by a sudden external physical force. Such physical trauma can lead to a variety of physical, cognitive, emotional and behavioral deficits that may have long lasting and devastating consequences for the victims and their families. The ability to enhance rehabilitative processes in the early stages following TBI is one of the great challenges for therapists. The use of interactive screen-based technology in neuro-rehabilitation may hold the potential to assist TBI patients regain basic functional skills.[2] The design of the *Elements* project is a direct response to these needs.

Conceptual Approach

Our conceptual development of the *Elements* system is consistent with emerging trends in Human Computer Interaction (HCI)[3] and the neuroscience of movement.[4] As reported elsewhere, our conceptual approach combines (ecological) motor learning theory with an embodied view of interaction design to inform the way we conceive of the relationship between performer and workspace.[5] The concept of *affordance* proposed by ecological theorist Gibson[6] is particularly instructive. Affordance refers to the opportunities for interaction that meaningful objects provide in our immediate environment and in relation to our sensorimotor capacities. The perceptual properties of different objects and events are, thus, mapped fairly directly to the action systems of the performer.[4,6]

The affordances offered by *tangible user interfaces* (TUIs) have been designed to engage the patient's attention to the movement context and the immediate possibilities for action. So, rather than embedding virtual objects in a virtual world, we use real objects and a direct mode of interaction. The ecological approach has a lot to commend itself by not drawing an artificial distinction between the performer and the natural constraints of his performance. Advances in interaction design also accord with this embodied view of performance.[3] Embodied computer user interaction capitalizes on our physical skills and our familiarity with real world objects. Our design is sensitive to the patient's sense of embodiment and how the environment might be presented to afford new opportunities for action and play. It seeks to provide an interaction aesthetic that is coupled to the individual's perceptual and motor capabilities, building a durable sense of agency.

Implementation

TBI patients frequently exhibit impaired upper limb function including reduced range of motion, accuracy of reaching, inability to grasp and lift objects, or perform fine motor movements.[7] The *Elements* system responds

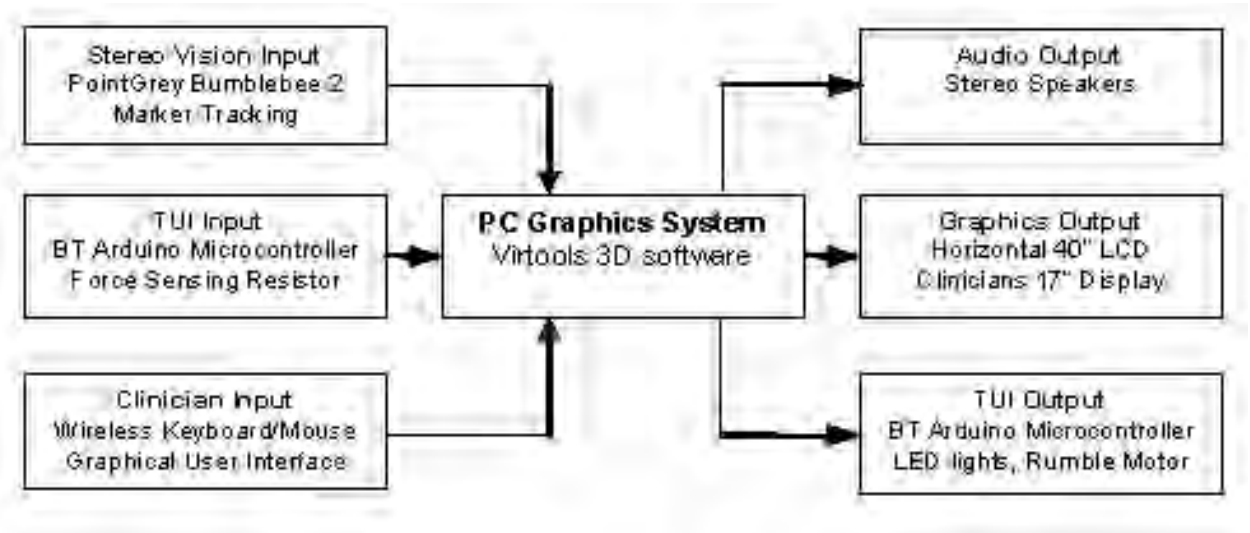

Figure 1: Hardware Functional Block Diagram

to this level of disability by using an intuitive desktop workspace that affords basic gestural control. The physical design of the *Elements* workspace consists of a 40-inch horizontal tabletop graphics display, a stereoscopic vision-based passive marker tracking system, TUI's and 3D computer game authoring software (Figure 1). The TUI is a graspable interface that incorporates low cost sensor technology to augment feedback that in turn, mediates the form of interaction between performer and the environment. The combination of 3D non-invasive technology is developed to empower TBI adults with moderate or severe movement disabilities. Audiovisual feedback can be used by patients to refine their gestural movements online and over time. In addition, patients can manipulate the feedback to create unique audio visual aesthetics. In short, the system design provides tactility, texture, and audio visual feedback to entice patients to explore their own movement capabilities in a directed and self-directed fashion.

There are two main aesthetic modes of user interaction which aim to exploit the potential of the *Elements* system. Each of these modes encourages a different aesthetic style of user interaction and consequently has different application potential. The first aesthetic mode of user interaction presents a task driven computer game of varying complexity that addresses the competence level of the patient. In this task, a patient places a TUI on a series of moving targets (Figure 2). The accuracy, efficiency, proximity and placement of the TUI is reinforced via augmented audio visual feedback. The patient can review their performance and test scores

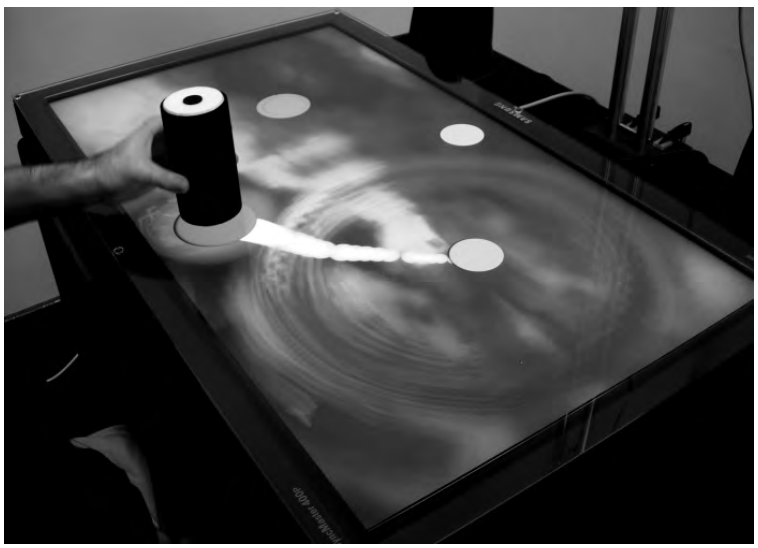

Figure 2: Patient places a TUI onto a series of moving targets.

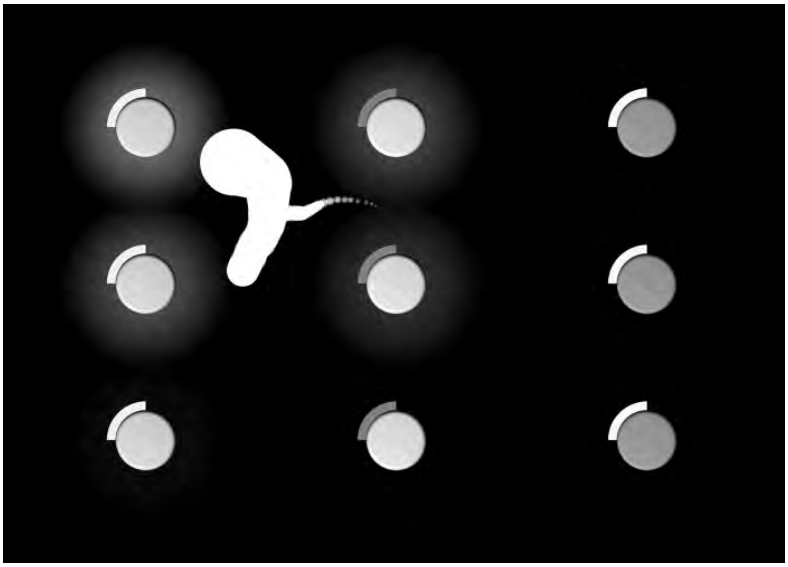

Figure 3: Screen image of audio mixing application.

as therapy progresses over time. The second mode of user interaction is an abstract tool for composing with sounds and visual feedback that promotes artistic activity. Painting and sound mixing is expressed through the patient's upper limb control of the TUI's (Figure 3). These environments are designed to evoke the patient's interests in practicing otherwise limited movement skills.

Discussion

Three male patients between the ages of 20 – 25 were recruited from the Epworth Hospital, Melbourne, Australia for a preliminary case study. The goal of this study is to measure and illustrate how our interactive environment can facilitate motor learning. The patient's upper limb performance and behavior are currently being evaluated and monitored overtime. Our preliminary observations show that significant improvements of movement accuracy, efficiency and attention to task have increased. All of the patients expressed a desire to interact with system in a creative capacity and have shown increased levels of motivation, engagement and enjoyment whilst undertaking the case study. These results suggest that applications that support creative and game style interaction tailored for TBI patients may improve their motor skills and sense of agency and control. These opportunities may be considered as a means to improve their quality of life in general using such a workspace. Further, it may be possible to tailor the system for a broader spectrum of people with mobility impairments.

Acknowledgements

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Intersections: Media — Action — Place

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Abstract

In this paper we trace the intersections of community action, media and embodied experience. A perfomative and interactive situation that mediates these intersections is referred to as situated media. The concept of situated media is focused on the interactive media events that are contextualized within a cultural and local knowledge, crafts and traditions with a potential to reflect a variety of approaches in new media, such as media performance, activism and culturally reflective interfaces.

Meeting place

Places allow cultures to intersect and give rise to novel hybrid performances, practices and structures. Places are socially constructed, politicized, culturally relative and historically rooted with local and multiple constructions. Places provide an articulation of cultural identity, and their uniqueness is defined through social interactions weaved together at a particular locus. Within the landscape of globalization the understanding of the identity of place is found in the context of its relations with the surrounding world. Doreen Massey (1994) takes a progressive view of place as a process that is continually changing, where multiple identities and histories intersect as well as different stories and experiences come together and become intertwined. If we turn to the concept of place as meeting place (Massey 1994), its identity is no longer simply an enclosed territory with essential characteristics; rather it is unique and particular point articulated through networks of social relationships and understandings: global, local, historical, social, etc. As a practice of daily negotiation we can understand it as the beginnings of democracy. A healthy democracy is an ongoing process that requires an ability and place to participate and negotiate with a mutual respect and an open recognition of difference.

Situated media as an interactive system

We consider the concept of democratization through media situated at the intersections of community action and embodied experience. The idea of situated media emerges within the post-traditional order as a form that intersects media, social interaction and physical location with a potential to reinforce a sense of place. Situated media can act as meeting place incorporating spatial, temporal and contextual considerations into the media design. The design of a situation where media is linked with place is inspired by the Balinese concept of ‘desa, kala, patra’ (space-time-context) (Herbst 1997). This concept is important to Balinese artists and it is discussed in both a philosophical and practical manner to aid development of the artistic work. It is a way of putting human activity into the context of the world and nature, intersecting with forces greater than those of human design. ‘Desa, kala, patra’ fosters a sense of place on both social and metaphysical levels. The socially expressive ritual of Balinese arts is situated within the place, time and context of performance, ritual and daily life. Following Artaud’s curiosity in the Balinese dance theatre and Bertolt Brecht’s approach to art, not as “a mirror to reflect reality, but a hammer with which to shape it,” the search for a ritualization of society began within the exploration of liminoid phenomena (Turner 1982), a specially designed process that contribute to social transformation and regenerative renewal of culture. In contrast to collective liminal practices of integral cultures, the liminoid practices of post-traditional societies are expressed in spectacle and distance. A collective ritual, that acts as self-representation of shared and common values, transforms into professional arts, which is an individual and optional activity.

In the domain of media activism the transference of the role of the viewer as media consumer to that of active participant and media creator enables the liminoid phenomena to emerge. Donald Snowden introduced the use of documentary film for enabling community transformation. In 1967 he devised the Fogo Process — a people-centered community development approach — which via media tools assists communities and individuals to discuss poverty, issues and opportunities from the perspective of those who experienced them (Williamson, 1991). By giving control of documentary filmmaking to the participants Snowden facilitated an opportunity for the communities of Fogo Island to represent themselves both to each other and to the world. The significant byproduct of this process was a community-produced vision of common needs and realities that was made possible through a combination of documentary media reflections and constructive discussions in follow-up meetings within the place of Fogo Island.

The work of Surajit Sarkar and Catapult Arts Caravan provides a contemporary example of situated media performance that brings together the creative abilities of local artists, digital media and public participation. Their media performance initiatives in North East and Central India have acted as a catalyst for public participation and debate in rural areas, articulating issues and ideas of common interest through media performances set in public spaces. Documentary media process is employed to collect local knowledge and testimonials while the media performance setting allows them to create dialogue among community members. This public situation enables people to observe themselves in their own setting through media images — seeing themselves and their neighbors — mixed with live performances of musicians singing in their language and dialect. Here aesthetic virtue and creative abilities of the local artists are used as a strategy to inspire people to engage in a further dialogue during the public performance. In this context situated media performance presents a form of social ritual, intentionally 'scripted' to provide a process for reflection, participation and democratization. The production method shifts from working towards final product and outcome towards the development of processes in which performers, participants and media can interact, transform, improvise and imagine new communal realities.

Ritual interface

The situated media performance is a process that embodies ideas comparative to that of ritual performance. Ritual constitutes one way people communicate wisdoms, processes and information that are a part of the cultural group. It separates a person or a group from the state of conventional daily life and puts them into a place for free play, where convictions are suspended and converted, where they can transform, transit and finally be reincorporated into normal life. The ritual subject experiences a modulated belief system and, on the most basic level, experiences altered identity. Turner (1982) regarded performance as a genre in which modern peoples reflexively symbolize the critique, norms and conventional roles that govern their ordinary lives, and provide contemporary surrogates for religious ritual in traditional societies, with a great potential for creativity and change.

In the work of the Catapult Arts Caravan transformative interaction happens on the trajectory across participant and media. The ability to see themselves as a media image — as the projected self on the screen — allows the participants to transform and recontextualize their existence into new modes of being. They are at one time both the media image and performers. It is through the projected self on the screen that social boundaries (such as class, ethnicity, etc) among people within a given community disappear. People can see themselves as equally important within the media image, provoking a discussion about the conditions and realities of that community among the plurality of local participants. The projected media image becomes a place for negotiation where democratization happens. The media image in this

context acts as a liminoid technology — a ritual interface — that enables participation, personal transformation and empowers dialogue. Media performance situated as a ritual interface becomes an instrument for social action and a place for the cultural articulation. Ritual interface provides a boundary between who I am as a person and who I might become. Using the familiar metaphor of broadcasting this ritualized interface becomes the threshold — an interface to another world — where equal negotiation and communal transformation is possible through public engagement, interaction and exchange.

Situated interface as cultural articulation

An interface is a membrane through which we think as much as act, functioning as it does as a nexus for not only sensations and feelings but also philosophical concepts and understandings of the world that it mediates. The interface defines how we perceive, navigate and understand content. It characterizes not only how we perform while engaging with it, but also how we feel during the interaction. In the context of interactive media, culture becomes something we perform while engaging with the interface. The interface enables media to become corporeal and empirical, through the use of familiar metaphors. It is important to recognize that familiarly with metaphors is culturally specific. Every interaction performed within a given culture has some form of cultural encoding embedded in it and thereby carries cultural information. One ramification of this is that cultural codes perform differently and elicit different responses when used outside their native cultural context. These differences constitute a form of cultural information, after Gregory Bateson's (1972) definition of information being a difference that makes a difference. To embed cultural information into an interface means to situate it within a culturally specific expression and metaphors. From this perceptive it is essential that interfaces evolve into systems in which technology animates a particular cultural form. This entails the integration of culturally reflective processes in media technology design and interaction.

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Negotiating a Newer Hybridity: Technology in Bollywood Film Songs

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This presentation studies some exemplary ways in which sophisticated audio processing and packaging technologies have been used in the hybrid aesthetic of Hindi film songs in the post-90s period, especially with regard to how such uses of technology correspond to post-liberalization narratives of national identity in India. Just as films have mediated post-colonial nation-building — often seeking to construct a coherent idea of national subjectivity vis-à-vis the tension-ridden dynamics of gender relations, or sectarian/religious and class/caste differences — film songs too can be located in terms of their strategies to narrativize and aestheticize the nation(-al subjects) in the face of these tensions. This narration of nation in films and their songs can be seen as becoming all the more urgent in the period of economic and media liberalization, broadly periodizable from the late 80s/early90s through the 2000s — the time of the rise of Hindu right and various controversies and contests in the public sphere regarding issues of culture, gender, sexuality, and religion (Kapur 1999). In this period, we do not just see an articulation of citizenship and nationality in terms of globalization or liberalization, but also a re-appropriation and commodification of folk cultures and regional identities, resulting in a hybridity that mediates and negotiates between constructed polarities like 'folk/regional' and 'cosmopolitan', 'rural/traditional' and 'urban/modern'. This could be seen as resulting from the attempt of Hindi films to encompass a variety of sites to create a viable national narrative, addressing inequalities of economic and cultural access, yet foregrounding certain locations and subjects (generally urban, upper/middle class) as central. Film songs, too, while updating themselves vis-à-vis globally disseminated genres like hip-hop and techno and using the latest studio technologies to record/process audio, have turned to folk or semi-classical genres and styles to fashion hybrid musical identities, remixed Punjabi folk music being an example.

Following Ella Shohat's caveat that hybridity is not a singular phenomenon and has different modalities and political effects (Shohat 1992), I shall make an attempt to explore and delineate at least two different tendencies of hybridity that can be discerned in the use of technology, which for convenience of nomenclature I shall designate as a hybridity of quotation and a hybridity of synthesis. The hybridity of quotation and stylistic separation tends to index or bracket musical styles, and can be seen as opposed to hybridity of continuity and stylistic synthesis that tends to deconstruct stylistic boundaries, subsuming 'original' or 'source' styles in the new. Of course, both tendencies can simultaneously interact in a single piece of film music within its encompassing structure, and each can contextually correspond to different semiotic strategies in the narration of the nation and national subjects. Technology itself is not just a neutral device, but bears cultural markers that are negotiated likewise — especially if its use is evident in the sonic product and not just in the process of recording or mastering.

A brief contextualization of hybridity in Hindi film music might be helpful here. Arnold's analysis of eclecticism in Hindi film songs is a fruitful starting point. Arnold seeks to show how film composers have creatively united diverse intra- and inter-national styles into one that has pan-national appeal, an "integrated, eclectic music […] with a new outlet for musical experimentation and syncretism" (Arnold 1988). However, in trying to focus on the logic that makes film songs work, Arnold fails to pay much attention to the politics of this mainstream aesthetic of hybridity, the tensions it addresses, and what it includes versus what it excludes. Manuel takes greater account of the politics of film music — locating it as a centralized, studio-bred art that at the same time appropriates and marginalizes regional or 'folk' styles (Manuel 1993), but he doesn't provide any analysis of how this happens at the level of song structure and aesthetics. Of course, with the incorporation of sophisticated studio technologies, the studio aesthetician's power increases, and recordings of instruments and singers can be sampled, processed, looped and layered to manipulate and (com)modify existing genres and styles far beyond the scope of older recording technologies; reducing the role of embedded artists and performers (leading film composer A.R. Rahman acknowledges this in a 2007 interview). At

this juncture, thus, it becomes all the more important to examine the politics of this newer hybrid aesthetic, and the subsequent parts of the paper do so by analyzing the songs from some prominent films of recent years that very consciously mediate the question of the nation within globalization.

Swades (2004), for example, tells the story of a young non-resident Indian in the US who gives up his lucrative career to go back to his native village and improve its lot, as such it is a national allegory of reconciliation between the cosmopolis and the periphery, as well as a progressivist film on social responsibility and development. The song *Yeh Jo Des Hai Tera* (This country of yours) occurs at a crucial juncture when the protagonist makes the decision to return. The song quotes a looped sample of a *shehnai* (a north Indian woodwind instrument) and a short clip of crowd noise over which the vocals are layered; the vocals bridge a film style with a loose western pop vocal style. The accompanying visual sequence contrasts his busy professional life in the US with short static scenes that he remembers of India. This is an interesting juxtaposition of the tendency toward stylistic quotation with that of synthesis (the sampled *shehnai* that indexes north Indian traditional music versus the vocals that elegantly bridge western and Indian styles), to build up the image of a rural India that is static and waiting for the metropolitan protagonist to make his decision; while he too is in emotional need of that India, he is clearly the agent who bridges the gap by going back and helping develop that backward land. Just as the frozen *shehnai* clip is the backdrop for the urbane, hybrid vocals, that static rural India is the backdrop for his metropolitan hybridity and agency.

A similar interaction of these tendencies of hybridity is evidenced in another film, *Rang de Basanti* (2006), another allegory about the urban middle class youth of the nation in the period of liberalization, who must rise above consumerism, self-immersion and a general apathy toward politics to a more responsible and active role within the nation. The film hinges on the energy and joie-de-vivre of this group, which it suggests needs to be harnessed so that the national resurgence that liberalization promises may truly happen. This vital energy is evoked vividly in the title song, which layers a processed sample of the *tumbi*, a Punjabi folk instrument traditionally used to accompany folk group dances, under a hybrid pop-rock beat. The *tumbi* is used to evoke a raw energy and rurality, but is processed such that its timbre is smoothened to a more urbane aesthetic that simultaneously harnesses and marginalizes the folk. Again, it is middle class protagonists who fashion their hybridity by selectively negotiating with the rural, the regional or the folk, but the latter is processed and appropriated without much agential quality of its own.

Other songs, in comparison, explore regional/folk styles more fully, using technology to extend their already-hybrid, non-static aesthetic, rather than reference them within an entirely detached register. The result is of course neither folk nor typically filmy — one notices how reverb and equalizers are used skillfully to blend riffs on a bass guitar with a *Qawwali* (Sufi devotional) vocal style in the song *Kehna Hi Kya* (from *Bombay*, 1995), or how synthesized sounds complement the elaborate vocal phrases typical of the north Indian courtesan-song genre in *Namak Ishq Ka* (*Omkara*, 2006). Of course, this does not unproblematically translate into a radical politics that can represent agency outside the centralized metropolitan context, which frames and enables Hindi films and their music. As Vasudevan shows in his analysis of *Bombay* (Vasudevan 2001), the film continues to work with stereotypes of the Muslim community (a community with an especially fraught position in the liberalizing nation) whose music it uses, though at its more complex moments it militates against such representations. The effortless layering of *Qawwali*-bass guitar certainly approaches the *Qawwali* style from the outside, but studio technology here tends not to bracket out and package the style as much as use it as a living element in textural and structural weave of the song.

In musical hybridity, the line between creative synthesis and appropriation is always thin and depends upon interpretive context. This presentation has yet concentrated on a more semiotic study of song texture and structure, to demonstrate how while technology may seem to merely add to the power of the metropolitan studio aesthetician, thus strengthening the centralizing and appropriating capacities of Hindi film music, it also evidences differential tendencies while building a hybrid aesthetic. Perhaps it is the tension between these tendencies that could make for the most fruitful encounter that metropolitan film music has with its others — destabilizing coherent and centralizing tendencies in narratives of the nation in favor of more tentative, open-ended ones.

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The Geography of Posthumanity

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Abstract

We live in an age of information overload. Is it possible to give information an intuitive form better suited to human cognition, one that will enable understanding and memory? This article documents the process of extracting and visualizing data within a corpus of text documents revolving around the theme of Post-Humanism and the development of software to allow a global visual metaphoric representation of information.

Context

Humanity is now confronted with information overload. How can we comprehend it, filter it, and extract the useful, necessary, and essential pieces of information given our perceptive faculties which are adapted to understand general forms and structures but struggle with sequential and cumulative data?

Is an electronic archive a memory?

For the past few years, the technical aspect of information representation and visualization has been the subject of active research which is gaining more and more attention (Card *et al*., 1999; Chen, 1999 ; Don *et al*., 2007; Geroimenko and Chen, 2005; Perer and Shneiderman, 2006; Spence, 2007). Despite the richness of the work that has been done, there is still a glaring lack of projects related to textual analyses, specifically of literary or theoretical texts, which have successfully integrated advances in the field of information visualization.

Overall objectives

We aim to fill gaps in text-analysis visualizations by developing a prototype information-visualization software based on the automated analysis of a large corpus of texts on Post-Humanism.

Implementation interface

There are two basic interfaces for the project: Google Earth (GE) and a Flash-Papervision3D website.[1] Google Earth provides a foundation interface on which we implemented custom interaction controls. It was chosen because GE's interface is naturally intuitive, provides a viable baseline of already-implemented interactivity (roll, zoom, skew, select, etc…), and has a large user-base.

In our modified version of GE, knowledge is mapped to terrain, and users choose the density of information they desire by changing their altitude. GE allows the user to "dive" into the planet's geographical, political, and social layers, or to stay on higher, more general levels. In its normal version, GE shows us the world the way science describes it and political maps draw it; in our modified version, it is possible to spatially explore intellectual discourse on Post-Humanism.

This task presented three primary challenges: the first was to computationally analyze a large corpus of texts in a way that would produce relevant results. The second was to find an area to represent Post-Humanism and give this area a visual form. The third was to integrate, in an intuitive way, the results of the automated text analysis with the visual map.

Methodology of text-corpus analysis

In order to successfully create this thematic map, we first compiled a significant number of texts about Post-Humanism. The methodology used to treat the corpus was inspired by previous work in the field of text mining by one of our team members (Forest, 2006) and others (Ibekwe-Sanjuan, 2007; Weiss *et al.*, 2005). The goal of the analysis is to facilitate the extraction and organization of thematic groups. Non-supervised clustering techniques are used in order to produce a synthetic view of the thematic area of the subject being treated.

Visualising the results: epistemological cartography

It is possible to burrow physically downward into subject-regions with greater and greater accuracy; or to rest at an altitude above the subject and consider the overall 'terrain'. At any level, each region is associated with a cluster of documents which correspond to the thematic of that region; text excerpts are provided, and it is possible to consult the full documents associated with that region through hyperlinks.

Four basic theme-*countries* emerged: biology, humanities, technology and literature. Each country is further subdivided at two levels of resolution into regions and sub-regions that are each associated with thematic keywords discovered during the automated text analysis.

When the user zooms in on a region, the application shows the next level in the hierarchy of data visualization. Within one theme (as shown below) several sub-themes appear. A greater number of excerpts is available for the same area at increased levels of resolution.

Icons indicating the availability of texts may be clicked on at any time, allowing the user to read the excerpt in a small pop-up window, which includes a link to the whole article. This pop-up window can serve to show pertinent images or other hyperlinks.

Conclusion

We see the visualization of data, textual or otherwise, as part of a fundamental challenge that has captivated humanity since antiquity. The challenge is how to transform information into memorable knowledge and understanding. It is apparent that the significant amount of data produced by contemporary research in both science and the humanities is often much too great for any one individual. This overload of information sometimes leads to social disinvestment as data avalanches cancel each other out. We think that giving data from humanities' domains an intuitive form and leveraging computational advances in widely-distributed 3D interfaces to provide visually-navigated *realms* of knowledge, make the meaning of knowledge more understandable and enable its absorption into the collective consciousness.

1 The web-version is in development and will basically emulate a reduced set of features of the GE version, so we will constrain our discussion to the GE version.

Locating Media: On Spatial Associations between Digital Media and Exhibition Space

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This short paper outlines the spatial relationship between digital media and exhibition space by focussing on how the distributed properties associated with a selected locative media artwork were translated through curatorial design.[1] The discussion that follows describes how distributed spatial practice influenced the dimensioning of the exhibition form of this artwork. Through the applied practice of curatorial design and its concentration on the complex of relations that are synthesised by the exhibition, the virtuality associated with digital media is given spatial expression.

Distributable media are making a significant impact on contemporary aesthetic practices. While redefining how an artwork might actually take shape, these forms also challenge how artworks might conventionally be exhibited.[2] No longer consigned to screen-bound virtual spaces, digitally mediated practices are increasingly influencing how real spaces operate. As will become apparent in the following discussion, the curatorial design process mediates the way in which an artwork is 'transposed' under exhibition conditions. Pete Gomes' *Littoral Map* provides a particularly effective illustration of how the complex of relations that interconnect artwork, gallery and museum were negotiated as part of the curatorial design process applied to the *Remote* exhibition.[3]

Curatorial selection and exhibition design, which for the most part operate as asynchronous stages in the exhibition development process, are synthesised in the curatorial design approach. The curatorial philosophy of the *Remote* exhibition drew upon the coincidence of the invention of photography with early advancements in instantaneous telecommunications and seeking to give expression to the paradoxical relationship between proximity and distance. In turn, the curatorial design of *Remote* set out to challenge the medium of exhibition by proposing a hybrid model interconnecting multimedia spaces with the physical qualities of the gallery environment. Early concepts were immediately drawn to the potential for developing a 'distributed' exhibition that would capitalize on the architectural footprint of the particular site, accentuating both the physical properties of the Plimsoll Gallery as well as the social conditions which see it function within the cultural precinct housing the premier art school in Tasmania.

Deploying the gallery in a more 'instrumental' way meant that artworks could be related to the gallery but encountered in a number of supplementary, annexed spaces. The mixture of different locations, each with their own site-specific qualities, was factored into how artworks were to be situated within the exhibition's scenography. As the installation of the locative media work developed remotely by London-based artist Pete Gomes demonstrates, site-specificity not only entails an artwork's relation to its particular physical site, but also its context (at a micro-level through its own mixed media and multi-modal organization, and at a macro-level by the encompassing exhibition).

The work under discussion is representative of Gomes' ongoing performative utilization of GPS technology.[4] The genesis of *Littoral Map* drew its inspiration from the artist's pre-visualization of a tract of Madagascar coastline and its superimposition over the local precinct in Hobart that was to be transposed.[5] This particular iteration of the work employed a distinctive *multi*-media approach, with its centrepiece situated in the main entrance foyer of the Centre for the Arts. In this bustling public space, a series of four large prints were mounted into window recesses that line a glass wall opening onto an external courtyard. Upon closer inspection, these works present a series of maps representing the island of Madagascar. Increasingly magnified details focus attention to a coastal area of littoral forest in Southern Madagascar with the final frame superimposing this coastline over a floor plan of the Centre for the Arts.

To the right of this main arrangement that draws upon the familiar language associated with information display — photocopied printouts providing information about the mineral Ilmenite and its use in the production of Titanium Dioxide were found on a low podium. Discernible through the adjacent set of access doors,

the sound of assorted bird and animal calls filled the exterior courtyard. Blending in with the atmosphere of local sounds — ranging from seabirds and the sound of local heavy industry to conversations taking place in the social space frequented by staff and students of the art school — this sound scape leaked into the interior whenever traffic passed through the doorway.

At floor level, a white chalk-line ran continuously from the exterior courtyard, coursed through the foyer and cascaded down along the main staircase into the plaza below. The drawing directly transposed geographic coordinates of Southern Madagascar onto these locations using chalk and toothpaste (in reference to the use of Titanium Dioxide as a whitening material found in paints, food and many toothpastes). Both ends of this path were exposed to the elements. The path itself was impermanent and eventually 'washed away' as a consequence of being exposed to Hobart's winter weather. As a result, over time only ephemeral tracings were left in situ to record the line and its marking of coordinates (these notations indicated the GPS positioning of a series of selected points tracing the contour of Madagascar coastline with that of the exact location of the Centre for the Arts).

Gomes' *Littoral Map* was thus assembled through the connective tissue of the exhibition. When its dispersed and apparently unrelated elements were actualised by the continuous chalk-line that wove its way over, across and through a variety of sites, the work's resulting effect was put to the service of visualizing the invisible streams of information that pervade, permeate and envelope any geo-political sense of the interconnection of local and global spaces.

As introduced at the outset, the paradoxical interplay between distance and proximity underpins the thematic rationale of the exhibition. While the transcription of another place is effected through technological mediation or reproduction — which in the case of other artworks included in the exhibition inventory such as Susan Collins and Nancy Mauro-Flude's use of web streaming technologies and the audiovisual installations by Martin Walch and Derek Hart — the presentation of the mediated narratives of these artworks also involved a translation of digital contents into real space: the transposition of virtual spaces into (and — as most directly illustrated by the artwork contributed by Gomes — onto) a subset of selected physical environments.

The distributed spatial practice demonstrated through the curatorial design of *Remote* addresses the paradoxical conditions of technologically mediated experiences: experiences that are simultaneously dispersed and situated, that combine synchronous and asynchronous features that take place (somewhere; sometime) across a continuum of real and virtual spaces. By calling upon the exhibition form to provide the infrastructure that supports the contiguous meeting of different times and places across a series of distributed spaces, an experience of being dispersed between informatic and physical space is constructed for the viewer.

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1 The conference presentation accompanying this text will complement this abbreviated overview by providing a more detailed illustration of how the distributed properties associated with Pete Gomes' *Littoral Map* were directly translated through applied curatorial design.

2 An increased reliance upon participatory modes of engagement is a feature of many forms of digital communication, whether found in popular media or artistic contexts. According to Darren Tofts, these forms 'have modified the spatial and temporal dimensions of what constitutes an art event and an experience of it'. Tofts, Darren. 2005. "Beyond: Anticipating Distributed Aesthetics." In *Fibreculture Journal — Distributed Aesthetics* (7), Electronic Source: Fibreculture, unpaginated.

3 Remote was developed for and exhibited at Plimsoll Gallery, University of Tasmania, Hobart, Tasmania from 3-23 June 2006. (Artists: Susan Collins, Pete Gomes, Derek Hart, Nancy Mauro-Flude, Martin Walch; Curatorial Design and Locative Media: Vince Dziekan). Funding from Monash University, University of Tasmania and Arts Tasmania supported the project's research and development. For more information and supplementary documentation, see: [www.remoteexhibition.com].

4 Gomes' combined social and aesthetic engagement with locative media offers a refreshing alternative to the predominant emphasis upon experiencing networked environments through telematic interactions involving immersive formats. For reference, see Zapp, Andrea (Ed.). 2004. *Networked Narrative Environments As Imaginary Spaces of Being*. Manchester: MIRIAD.

5 *Littoral Map* is related to site-specific 'performance drawing' produced by the artist and staged as part of *Node London* in 2006. In this other iteration of the work, titled *Littoral Walk*, Gomes transplanted satellite coordinates of Southern Madagascar onto an area in South London in order to draw focus to this area of threatened coastal forest that stretches for 70km approximately on either side of Fort Dauphin. As Gomes' relates: 'This London walk is an imagined sense of myself in a specific location; for me, somewhere between future projection, imagination and a dream'. See: [http://www.mutantfilm.com/] and [http://www.nodel.org/].

Exploring the Metahuman Through Inverse Biotelemetry

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Introduction

Over the past ten years, SWAMP (Studies of Work Atmospheres and Mass Production) has produced a body of work examining various socio-political phenomena. Through this process we have come to define a certain subset of our studio practice as *inverse biotelemetry*. The term biotelemetry is borrowed from ecological fieldwork where scientists track the migratory patterns and vital statistics of animals outfitted with portable transponders. The data collected from these devices is used to determine the health of a species: the health of many is determined by analyzing a sample. SWAMP's *inverse* biotelemetry methods utilize similar portable technologies (ubiquitous and wearable computing) for more expressive purposes. In our performance, web and installation-based artworks, a single subject endures the effects of the many, or more specifically, the effects of the *metahuman*.

The metahuman refers to the extension of our bodies, through technology, whose manifestation has resulted in something that behaves on its own volition. Many systems of agglomeration could be described as metahuman, although the best example, and one that SWAMP artwork frequently addresses, is the present-day corporation: they compete for resources, mutate and evolve, espouse ideology, internalize and emote feelings, reproduce and die. Instead of bones, organs and DNA, they have human resource offices, doctrines, religions, cultural trends, boards of directors and immigration policies. Indeed, their origin in the United States is based upon legal proceedings that vivified the inert parts of business into the living corporation. Bestowed with corporate personhood (Allen 256), the inertia of metahumans is sometimes so great, that even humans serving in high positions within their structure are powerless to alter their emergent patterns of behavior. With circulatory and limbic systems comprised mainly of profit escalation, and no other feedback mechanisms to ensure such basic existence requirements as ecological homeostasis, it is through the lingua franca of persuasive media that dissenting individuals may hope to deliver feedback into culture. The collective processes laboring within SWAMP's inverse biotelemetry unpacks the physical and information architectures of the metahuman. These unit operations are then converted into an individual expressive gesture (Bogost, "Unit Operations" 1), arriving at what Ian Bogost defines as procedural rhetoric; a persuasive argument relying on the meaningful translation between processes ("Persuasive Games" 29, 43, 46). SWAMP's processes are not merely a means to an end, but reflect the ontogeny of the digital age: the global operations of economies of scale, war conducted through telepresence, and the general milieu of mass media communication. Metahuman's are often in command of these processes and SWAMP's inverse biotelemetry artwork is used to probe and outline their amorphous forms — like the effects of snow upon the invisible man.

The human within the metahuman

In 1848 Phineas Gage, a railroad construction foreman, suffered an accident. While blasting away rock, an iron rod shot out of the earth, through Gage's jaw, exiting the top of his head, carrying bits of brain and blood along with it. Surprisingly, not only did Gage survive this accident - he also retained full memory, motor functions, and language ability. But as time went on, subtle symptoms of his injury became obvious, generally playing out as capricious and self-destructive behavior. The notes of his case would later be integral in building our contemporary understanding of the complex interconnectivity of the brain functions supporting cognition and consciousness (Damasio 11-19). Ironically, while Gage's accident has served as a platform for scientific inquiry towards understanding the human mind, it also serves as a symbol for understanding the metahuman mind, and Gage himself,

as a casualty of the nascent railroad metahumans of the 19th century. Gage's injury was work related — it occurred while expanding the railroad in New England. And railroads were more than a new rapid means of travel, they were the focus of historically significant law making. Railroad legal battles, such as the Santa Clara vs. Southern Pacific Railroad, were the incubation chamber from which corporations were declared to be people (Allen 256-260). Bestowing abstract business ventures with the legal powers of human beings was the precedent for enabling corporations the global influence they have today — their stature as metahuman.

SWAMP Art Projects

When Mihaly Csikszentmihalyi wrote *Flow: the Psychology of Optimal Experience*, he based the text on careful observation and research into our leisurely activities, such as dancing, rock climbing and basketball. By analyzing what people get out of their pastime investments, he arrived at a range of human values devoid of pecuniary reward. Csikszentmihalyi later establishes his famous Flow model that encourages living with a greater focus on inner wellbeing (Csikszentmihalyi 5, 49).

SWAMP taps into a similar sentiment. For the most part, we feel metahuman systems offer individuals a lifestyle based on pecuniary and extrinsic rewards; a way of life that does a good job at generating profits, but offers little in the way of satisfying personal fulfillment. By being aware of metahuman systems, people can be more discriminate in their actions as a consumer. Spore 1.1 (Figure 1), is a SWAMP artwork that promotes this thinking. Formally this project can be described as a portable ecosystem for a rubber tree plant purchased at Home Depot. An onboard computer uses data scraping software to access Home Depot stock quotes, keeping a database of the ensuing stock values. Fluctuations are determined at the end of each week: increases activate the electronic water pumps, injecting water into the soil; decreases activate nothing. Progressively, the relationship between the corporation and individual is revealed upon the plant's vitality. If the plant dies during this routine, it is returned to Home Depot and replaced at no additional cost. Jacob Ward has perhaps the best summary of how this artwork's procedural rhetoric exposes Home Depot as a metahuman organism.

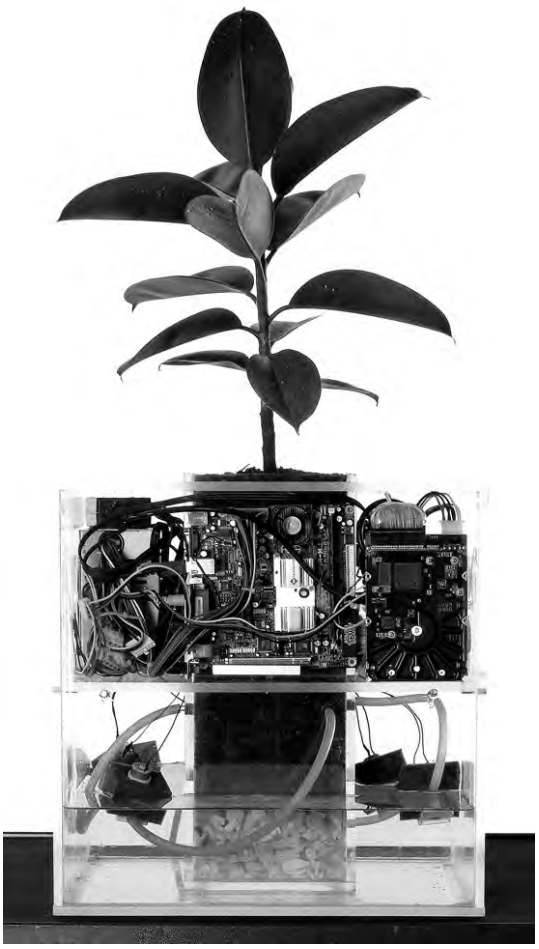

Figure 1: Spore 1.1 (2004).
Photo courtesy of http://www.lukehoverman.com

> They're calling attention to the policies that corporate competitors spend decades formulating — policies that end up shaping the American lifestyle (… Easterly and Kenyon, in their small way, are touching Home Depot's Achilles' heel). (Ward 47)

Figure 2: Consumer Index (2008 -)

A more recent SWAMP artwork is Consumer Index (Figure 2), which features SWAMP co-founder Matthew Kenyon as the performer. While Phineus Gage accidentally pierced his head with a railroad implement, inviting advancement of neuroscience, Kenyon has purposefully pierced his head — or, more precisely, his cheek, advancing a procedural rhetoric. But this is not a form of cosmetic body-modification. Kenyon's cheek hole is required for a customized piece of hardware we refer to as the *scanmera*: a hacked-together miniature digital camera and bar-code scanner adhered to the roof of Kenyon's mouth. The data and power wires route through the hole in his cheek to access power and data modules carried in a backpack. The on-going performance takes place at a local Walmart where Kenyon works towards iteratively scanning every product. He does this by picking up products and holding them up to his open mouth. Uttering a short grunt activates custom circuitry on the scanmera, taking a picture as well as logging the product. After an hour or two of work, Kenyon leaves, picking up where he left off upon each return visit. The scanner module on the scanmera is no ordinary scanner, but a ubiquitous computing device from Nielsen Media Research called the Homescan. This portable scanner is given to member-subscribers of The Nielsen Family, tracking their shopping patterns through place and product.

What the Nielsen Media Research produces is human biotelemetry, and it is perhaps the most explicit example (other than Gage's brain necrosis courtesy of the Burlington Railroad) of the human relationship within the metahuman. Consumer Index exploits this situation by adapting the Nielsen Homescan into a tool for inverse biotelemetry. Through devises like the Nielsen Homescan, companies like Walmart are able to determine how to serve a complex array of shoppers. But these monitoring systems and corporations do more than survey our needs and desires; they actively shape them. Consumer Index diffuses the metahuman into unit operations for building a procedural rhetoric: the demographic becomes the individual, and our contoured needs and desires are reflected back to expose humanity's reduced syntax as customers of big-box retail, as with the metahuman called Walmart.

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First Person Shooter: The Subjective Cyberspace

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The most important thing about the First Person Shooter (FPS) are its genre conventions and the fact of keeping the graphic card hardware industry leaning forward. We may say the FPS is a technology-driven genre, due to hardware demands; however it is also *subjectivity-driven*. Videogames in its short history present a huge list of titles that continue to improve the ludic cyberculture, but the FPS videogames are the ones who improve the entire videogame industry by concealing big maps, advanced AI, complex Trigger Points[1] in the game programming, and, of course, in astonishing audiovisual landscapes. Based upon the legacy of linear perspective from the graphical arts and the computer code languages, the way the FPS is still played has its origins, whether it is in VR systems, LCD screens or LAN-PC-based game parlors. According to the evolution of the computer networks and the online multiplayer parties, the FPS has evolved into an online-venture game. The FPS is the videogame genre responsible for requiring more hardware and software to fit in the performance of Full Motion Videos, Cut-scenes, Rendering Sequences and Machinima.

What makes the First Person Shooter so interesting to watch and so addictive to play is the fact that the player actually sees all the world-environment as if he would be there, "right there, right then", as a form of "right here, right now". Seeing all the action under the perspective of a character's eyes puts the player beyond the task of being a computer user, and a game player, ahead or before the screen frame. Therefore we may call him *user-player*, because before the game rules are established, he is a user of that technology, no matter which game interaction is at stake. Although, the ability to see one's hands, touch objects (*Half-Life 2*), turn the lights on in dark places (*Doom III*) or actually get into a fight (*Breadown*) seems also to be highly addictive for players.

Some developers try to aestheticize the weapon relationship that gamers maintain with the images of the game guns (obvious in games such as *Black*). Beyond the realm of present day gamers start to find in store's shelves FPS games that look like *western* movies (*Gun, Call Of Juarez*), but the questions get complex when we find other videogame genres including the first person perspective to improve immersion in their VR world. It means the FPS conventions are crossing platforms and game styles because they are focused on immersion. And despite FPS games looking awesome in flat screens, in comparison to the VR promises of Head-Mounted Display (HMD) and Datagloves; we did not go into virtual reality through helmets and wires. It just so happened that screens are still addictive, and in the realm of the FPS genre, they actually play a role of utmost relevance, because screens allow to see a sort of *partial reality*, a *sliced reality*, in fact, of a much broader, high-definition, 360º *media-environment*. By being able to spot just part of the action, *user-players* get much more thrill than in playing any other game genre.

Some videogames like *Black* sure underline the concept of "Gun Porn", because they focus on the phallic form and functionality of the FPS. But in games such as *Red Steel*, *user-players* actually may play in 3D with a Wi-Fi remote controller that understands the movement of the player's arms in several coordinates axis. The result is a "what you do appear in the game" strategy, as if there would be no screen frame between game and gamer. Other FPS videogames actually are very immersive because Non-Playing Characters (NPCs) show up in great quantity, interact and make us, the lead *user-player*, feel that we are part of a wide scale virtual reality. In this case, the *programming/mise-en-scène* is so sophisticated that *user-players* clearly are users of a new media for audiovisual storytelling in the first place. This so-called *user-player* is so immersed in a technological discourse much before the game logic that it is usual for gamers to actually forget how much time they spend just to be aware of the game's codes. Besides playing, the multiplayer world of videogames allows *user-players* to discuss strategies and share valuable information through the networks. For that purpose they transcend the boundaries of mere Multi-User Displays (MUDs) born for chat room communication — which is typography — and reveal a new behavior in the digital realm of the First Person Shooter — a *machine-*

subjectivity — because they are always inside a virtual space — which is composed by digital topography. Halfway between the real and the virtual is the screen, a projection place where we identify what it is left of a postmodern representation, our hand (as in *Medal Of Honor*), arms (*Far Cry*), legs (*F.E.A.R.*), but not that often a face (*Doom III*).

We can see our hands in *Breakdown*, talk to NPCs in *Half-Life 2*, contemplate real-action war theatre in *Call of Duty 4: Modern Warfare*, but not many games immerse us inside paradise landscapes like *Crysis*. Some new approaches in the FPS development, like SEGA's *Mirror's Edge* evokes the first person perspective and redefines the FPS style conventions in urban virtual space to do something besides shooting monsters. Everything is about the person, not the gun: the character we play with is called Faith and it is all about acrobatics. Anyway, it is always understandable that the inexorable sci-fi aesthetics support the FPS genre since its beginning in *Wolfenstein 3D* or in *BattleZone*. William Gibson's *Cyberspace* is the *ur-definition* of the digital ludic topography of nowadays *subjective gamespace*. This *subjective cyberspace*, as I prefer to call it, is much more fast-forward than most of the hardware technology left off by two decades of VR start-ups. Undoubtedly in its own way, the FPS is the VR that never happened global of the screen frame. The *subjective cyberspace* has been built by *user-players* themselves, what led to the creation of *Counter-Strike*, originally a Mod created for the outstanding *Half-Life* First Person Shooter. A *user-player* runs in corridors, deciphers architechture enigmas and experiences something like a movie storytelling, which is the point when a FPS leaves an unforgettable mark on the gamer. Subject and machine get along through a network of ludicity in which the core is a videogame.

Thanks to contemporary Graphic Engines,[2] First Person Shooters are becoming more complex in their development, due to the bigger Middleware research teams and graphic artists necessary from concept art till programming. Software engines are being so well designed — in terms of physics, motion, time — that a desirable effect is that FPS videogames will become much more story-based cinematic experiences than before. We may understand also that the ever-expanding topographies of FPS games in online parties are so relevant that it is obvious they will become more and more *veiculation spaces* or *transit space*. Which is to say, places unreal enough to pass-by but not real enough to stay-in. Playing *Half-Life 2*, *Far Cry*, or *Crysis* allows us to understand better this conception of cyberspace as a place — in a Gibsonian and Mcluhanesque manner — that actually is a *media-environment*, but a place so big as the infinite vectorial gamespaces of movies like *Tron*, for which to travel a vehicle is very necessary. The first videogame to justify the vehicle as a tool in space, due to the topography size, was the classic *Tau Ceti*.

Inside the global entertainment arena the First Person Shooter is the only game genre that allows *user-players* to accept the virtualism as an addictive substance. Substance which in this case is built upon textures, sounds and motion capture techniques, all this to introduce us to the most believable *machine-images* (André Parente, 2004) ever made. Images introduce us to weaponry, cities, vehicles, characters and a whole army of digital

Crysis

Mirror's Edge

actors to interact with. The next generation of graphic and ludic images are already here, they're focused on machines and they are machine-like, code bits. And they all are in the same space, like William Gibson confirms about classic arcade videogames: "Well, if there's space behind the screen, and everybody's got these things at some level, maybe only metaphorically, those spaces are all the same *space*" (Mark Neale, 2003: 2.8: Cyberspace). Gibson forecasts the relation between player and cyberspace as a relationship of subjectivity based on space grids. The same is to say that cyberspace is a *subjective landscape*, all is about how the *user-player* plays by the book of cyberspace rules (*ludus*) or not. Nonetheless, in *The Language of New Media* (2001) Lev Manovich, states that for the first time, space becomes a *media type* (p.251). In other words, cyberspace has become a media format, beyond any corridoring of player movement. In the end stands only collections of forbidden images, belonging to copies which are themselves forbidden, and those require subjectivity due to hiding such a grandiose apparatus.

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1 Trigger-Points are distinctive zones in game maps in which players trigger Cut-Scenes, adversaries showing on or accidents, just by getting across such areas.

2 The Graphic Engine is the software used by designers to create virtual architectures that comprehend the simulation of physical phenomena, as well as the recreation of perspective in terms of optics.

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Half-Life 2 (Valve Software / Sierra, 2004: PC)

Mirror's Edge (SEGA / SEGA, 2008: PS3)

Red Steel (Ubi Soft, Ubi Soft, 2006: Wii)

DNA in a Suitcase: Border Transmissions and Hybrid Bio-Collaborations in *BioHome: The Chromosome Knitting Project*

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Introduction

At present nature is being manipulated and changed rapidly by biotech science. This transformation of nature, as we experience it today, seems dramatic mainly because of the accelerated rate of scientific and technological developments, as opposed to the slower pace of evolutionary change. The rapid incorporation of biotechnologies and life-science products and procedures is blurring the borders between nature and technology, as well as creating a sense of both excitement and fear in the media and society.

Sarah Franklin suggests that cloning, genetics and the changes that flow from them:

> Affect the human condition in its every aspect, the food we eat, to the ways we define health, to our national economies, to our understandings of the human, the future and ourselves […] genetics is reshaping the basic concepts through which knowledge about ourselves and our world is produced. It is for the same reason that these engender conflicting feelings of excitement and anxiety. (Franklin: 2)

An exploration of the social and natural environment transformed by developments in biotechnology forms the basis for *BioHome: The Chromosome Knitting Project*. The work explores genetically engineered, modified and transformed natures: how we react to accelerated change, how we create myths and stories to deal with them, how we respond creatively to the ethical lines around genetic modification and cloning and how we respond to popular science depictions of these amazing scientific feats.

Hybrid collaboration

BioHome: The Chromosome Knitting Project is a hybrid performance/installation incorporating live 'wet biology' practices in a contemporary biotech display home. It was first presented at the University of Wollongong in August 2006. The installation features video, interactive sound, live performance and text. Wet biology procedures such as plant DNA extraction and live insect cell culturing are used to explore reproductive futures and biotechnologies. In the context of this performance, 'wet biology' is the term used for working with live plant or animal material in the life science field, including genetic modification of organisms and the creation of bio-products.

Visitors are welcomed to the *BioHome* installation by a plasma screen video introduction at the entrance (Figure 1). When the audience enters the installation space they hear a recorded voice outlining laboratory

Figure 1: *BioHome* welcome screen video.
Image: Gregory Clout, Robert Dinnerville, Jessica Ellis.

safety instructions over ambient but unsettling music. This music creates a sense of an insulated environment, a world that might exist just beyond our current reality, in which home and laboratory intersect. Upon entering

Figure 2: Knitting salmon DNA. Image: Russell Emerson.

the gallery the audience sees several domestic spaces: a kitchen tabletop, a bassinette, a chair with knitting and a bed with a screen. It is only when they inspect more closely that this domesticity is disrupted by the intriguing and uncomfortable presence of biotech products, including live caterpillar cell cultures, salmon DNA fibres, pea seedling DNA and IVF hormone products.

The blurring of lines between laboratory and domestic procedures aims to heighten the awareness and discomfort the audience may feel about incorporation of biotech products in our daily lives. They are encouraged to investigate and interrogate these technologies and their impact on human, social and environmental futures and contemporary kinship systems.

The performance includes a number of characters: a naïve and eccentric housewife who invites newcomers into the biotech display home, exploring objects and products with a domestic simplicity and innocence, a scientist who demonstrates laboratory procedures for extracting DNA from snow pea seedlings, and shows how to knit with a sticky white fibre extracted from salmon DNA (Figure 2), as well as a storyteller who recounts a fable about *The Woman Who Knitted Herself A Child*.

Knitting is a central metaphor in the performance, highlighting the similarities between the use of patterns and stitches in knitting to the basic techniques of biotechnology or genetic engineering, i.e. working with DNA as the 'building blocks of life'. It is also a metaphor for human reproduction. For the interactive sound installation, a number of standard pattern stitches used in knitting are represented as patterns in sound. These sequences are realised using inharmonic timbres

based on band patterns that result from a technique used by molecular biologists to analyse DNA known as gel electrophoresis.

The work has been developed by writer / performer Catherine Fargher in collaboration with composer Terumi Narushima. The collaboration has come about as a result of the artists' participation in a biotechnology workshop run by SymbioticA, The Art and Science Collaborative Research Laboratory based in the School of Anatomy and Human Biology, University of Western Australia. Various stages in the development of *BioHome* have involved hands-on support from the School of Biological Sciences, University of Wollongong. Further collaborative work was done with New Media/Design students Greg Clout, Robert Dinnerville and Jessica Ellis at Wollongong University to develop a branding style, website and promotional video for *BioHome*. Fictional trademark names of *ChromoKnit doll*™ and *BioHome*™ were also created.

Sponsorship

Sponsorship from international biotech companies has been a key source of in-kind support for the *BioHome* project. The performance has been made possible thanks to sponsorship for salmon testes DNA and sf9 cell products, as well as laboratory equipment from international biotech corporations Invitrogen, Sigma Aldrich South Pacific, as well as Eppendorf South Pacific. Acquisition of biotech products from such corporations raises ethical concerns, and on the whole, independent artists are not able to acquire these products without collaboration with a university biology department. As there is increasing privatisation in the area of biotech production, there is also increased legislation and corporate control around the area of biotech property rights. In the case of Steve Kurtz, bio-terror investigations were commenced at his home studio/laboratory following the death of his wife. Kurtz's collaborator, a university science academic, received a charge of 'wire fraud' in relation to acquisition of bio-products for Kurtz's artworks. The case has recently been dismissed in the US courts after several years of litigation. These matters are discussed in an article by Anna Munster, "Why is Biopolitics not Bioterrorism?" (Munster: 45).

Border crossings with bio-products

Transporting bio-products across borders also becomes a significant issue for bio-artists whose work is travelling interstate or internationally. As there are transport restrictions for bio-products, especially products that are considered hazardous, artists are required to go through painstaking red tape, and in some cases choose simply to smuggle bio-products in their luggage undeclared. For example, salmon testes DNA required for *BioHome* performances is transported in a refrigerated school lunch bag with freezer blocks. There have also been stories of frog cells transported in a male bio-artist's jockey pants to keep them warm while crossing international borders!

BioHome: The Chromosome Knitting Project will be presented in October 2008 at the Experimental Art Foundation in Adelaide, Australia, as part of the Art & Biotech 08 exhibition.

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Plink Jet

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Abstract

Plink Jet is a robotic musical instrument made from scavenged inkjet printers and guitar parts. We investigate the expressive capabilities of everyday machine technology by re-contextualizing the relatively high-tech mechanisms of typical office debris into an electro-acoustic musical instrument. We also explore the performative relationship between human and machine.

Introduction

Plink Jet is a robotic musical instrument made from scavenged inkjet printers. The mechanical parts of four inkjet printers are diverted from their original function, re-contextualizing the relatively high-tech mechanisms of typical office debris into musical performance. Motorized, sliding ink cartridges and plucking mechanisms play four guitar strings by manipulating both pitch and strumming patterns mimicking human hands fingering, fretting, and strumming a guitar. Plink Jet is designed to play in three modes: automatic (played by a micro-controller), manual (played by a musician), or a combination of both. A musician can choose varying levels of manual control over the different cartridges (fretting) and string plucking speeds (strumming), while improvising with preprogrammed sequences of Plink Jet.

Interface

Plink Jet is designed to play guitar strings both manually and automatically. The interface consists of four toggle switches, four three-way switches, four dials, a single six-position rotary switch and a single power switch. Each of the four toggle switches and three way switches is associated with a single ink carriage. The rotary switch allows the user to select different pre-programmed patterns while a carriage is under automatic control.

Fretting

The guitar strings are strung across the printer mechanism where the optical sensor used to be. Cartridges slide up and down the strings and touch the strings just enough to change the pitch, similar to a slide guitar. The farther away the cartridge is from the plucking mechanism, the lower the pitch of the note.

Each carriage is controlled by a toggle switch and a 3-way switch. Toggle switches control whether the associated inkjet carriage is under manual or automatic control. While under manual control, the back-and-forth motion of each carriage is controlled by a three-way switch. While under automatic control, the carriage is controlled by a micro-controller containing programmed patterns of movement.

Strumming

The guitar strings are plucked by motors with a single thin metal strip that strikes the string as it rotates around. Four dials control the speed of the strumming motors. Control over the strumming motors exists regardless of whether the associated carriage is under manual or automatic control.

Amplification

Inside each ink cartridge is a piezoelectric microphone used to pick up the sound of the plucked guitar string as well as the ambient sounds of the sliding cartridge. In many ways Plink Jet is an elaborate guitar, and like an electric guitar it has a single quarter-inch output jack which allows it to be connected directly to a guitar amplifier.

Technology

The printer carriages and motors are from four inkjet printers. The controlling circuits and electronics are custom-designed. The optical encoder of each inkjet printer has been removed and replaced with a tunable guitar string that uses actual guitar tuning mechanisms built into the machine.

Circuitry

While under manual control, Plink Jet's circuitry is completely analog. The only digital element is the micro-controller used in automatic mode.

DC Motors
A DC motor connected to an H-bridge chip controls the back and forth movement of each carriage. While in manual mode, the three-way switch controls the H-bridge with 5VDC. While in automatic mode, the H-bridge is under the control of the micro-controller.

Stepper Motors
The strumming mechanism is driven by stepper motors, normally used for the docking procedure of the ink carriages. Each dial is attached to a potentiometer which controls the speed by changing the voltages on an oscillator chip. The oscillator signals are connected to hex divider chip, that acts as a stepper driver. The stepper signals are then relayed through a Darlington array before triggering the stepper motors.

Micro-controller
Plink Jet uses an ATMEGA168 chip containing six pre-programming patterns to control the fretting when a carriage is in automatic mode. A six-position rotary switch selects which pattern to use. When a carriage is in automatic mode, the ATMEGA controls the associated motor's H-bridge.

Everyday machines and music

The repurposing of consumer technology is a growing trend for artists and technologists in the DIY genre exploring circuit bending, hardware hacking and retro-engineering.[4] Artists who have used the mechanics of printers for producing sound include Paul Slocum with his dot matrix printer and Eric Singer's printer/scanner-inspired musical instrument, GuitarBot. The innovative American composer Harry Partch built many of his instruments out of trash and his own carpentry. Plink Jet emerged from the process of hardware hacking and could be considered an *infra-instrument*, a concept developed by John Bowers and Phil Archer. Infra-instruments are often created by taking a non-instrument and finding the instrument within.[1] With Plink jet, we have found the infra-instrument within the inkjet printer.

Structure and Improvisation

A musician playing Plink Jet is like a pianist playing a player piano. Two performance operations are occurring simultaneously. There are the programmed, ordered movements of the machine itself, and there are the improvised decisions of the user regarding levels of automatic and manual control and his or her reactions to the precise mechanical patterns. The Player Piano is one of the first examples of an automatic, mechanically played musical instrument, but early player piano rolls lacked expressiveness when played because they were created by hand directly from the music score.[2] Electronic or machine music often evokes very different emotions as opposed to human-performed music because of its super-human precision. The combination of these two musical aesthetics (prepared and improvised, machine and human) expresses a tension in our relationship with machines. Reflecting upon the interplay between a mechanical presence and human player, Eric Singer of LEMUR has said "I believe it is an entirely new experience for the human players. The robots create a physical, responsive presence (unlike synthesizers) which can profoundly affect the humans interacting with them. Because they move as well as sound, they take on a personality of sorts, and inspire the human players in a unique way."[3] Numerous options for playing Plink Jet between manual and automatic control opens a dialog between the player of Plink Jet and the robotics of the mechanisms themselves, and a performance broadcasts this dialog between machine structure and human improvisation.

Acknowledgements

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New Media, Politics and the 1968 Venice Biennale

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Introduction

My paper explores the way new media art and politics affected the Venice Biennale in the late 1960s and the legacy of 1968 for the Biennale as an art institution engaged in rethinking the notion of art. In particular, the paper aims at exploring the crisis related to the continual recuperation of supposedly radical art in the Venice Biennale in the mid 1960s and 1970s. To analyse this I will consider the Biennales of 1966, 1968 and 1974, which are not directly connected with each other but show how, after the dissolution of radicalism at the Biennale in 1968 similar gestures will be recuperated by the same institution over the years on different levels. I will then give some examples of how these tensions were played again in the following years, between the 1980s and 2001.

The 1968 Venice Biennale

1968 represent a pivotal node in the history of the Venice Biennale, when categories and grand prizes were abolished by the institution's Charter.

During this year, both in Europe and in the States, numbers of student activists, intellectuals and workers formed movements to demonstrate against capitalism and the bourgeoisie. These protests deeply affected Italy and Italian cultural structures. Many academies and universities were occupied by protesting students. The Venice Biennale and other art institutions such as the Milan's *Triennale* were conceived as symbols of the bourgeois culture and therefore boycotted. The opening of the 34th Biennale in the summer 1968 took place in a climate of tension that followed the heated uproars of spring 1968. On 18th June a riot culminated in Piazza San Marco where a crowd of students and intellectuals gathered in order to assault and occupy the Biennale. A police squad intervened on the protesting crowd (Figure 1) and occupied the Giardini, where the

Figure 1

Biennale *vernissage* was about to take place. Because of the presence of the police to such a cultural event, most of the artists participating to the Biennale refused to open their pavilions, others in sign of protest turned their canvases towards the walls (Figure 2). Eventually and slowly the strain decreased, the pavilions re-opened and the award of the prizes postponed.

Figure 2

The abolition of Prizes from the Biennale's charter was one of the first palpable results of the 1968 revolts. A series of debates on the future of the Biennale took place in Venice during the winter, and the institution took into consideration the idea of re-writing the Biennale's charter in order to reflect the needs of contemporary art and society.

Another reason that led the Biennale to change the original charter was the crisis related to the medium specificity brought to the art scene by the new experiments in art and technology of the early 1960s. The Biennale reflected this change in 1966 when the idea of subverting the conventional categories was mooted by kinetic and optical artists.

Julio Le Parc and the Venice Biennale 1966

In 1966 Argentinean artist Julio Le Parc presented his kinetic works to the Biennale. The role of the artist, according to Le Parc, was to revolutionise the art world and to "open people's eyes" by offering the spectator a variety of elements that can be altered and animated by their dynamic participation. The works presented by Le Parc at the Venice Biennale showed this intention. With such works Julio Le Parc won the Biennale's Painting Prize. The award of such a prestigious prize to an artist who encouraged the spectator to 'play' with his works rose considerable criticism among art critics and the press. The judgments on Le Parc and his art found in specialist academic art journals were mainly negative. Some other comments reflected mixed feelings, such as the one of amusement and surprise, but also perplexity and confusion over a 'best painting prize' given to an artist whose works 'do not have any paint on it at all'. The notion of art was undermined and categories in the visual arts became pointless. The disembowelment of the categories that followed Le Parc's gesture encouraged the institution to take into consideration the discussion over a new charter. From the 1968 edition the Biennale abandoned the traditional division of art categories.

The 1974 Venice Biennale, *Freedom to Chile*

The 1966 crisis and the 1968 collapse of the Biennale's organisation prefigure what happened in 1974.

First, the new Biennale's charter, approved in July 1973, was adopted. New laws regulated the entire Biennale's organisation in order to give the institution, which still remained a public organisation, a more autonomous status. More responsibilities were given to the Steering Committee and more freedom and independence was given to the Director.

Second, as a response to the military coup of 1973 that led to the killing of Salvador Allende and Pinochet's dictatorship, the President of the Venice Biennale, socialist Carlo Ripa di Meana, dedicated the entire event to Chile. The theme *Freedom to Chile* inspired exhibitions, documentaries, concerts and conferences. Salvador Allende's widow, Ortensia Allende, gave the Biennale's inaugural speech and exiled Chilean mural artists gathered together to form the *Brigada S. Allende* in order to paint murals all over Venice with the aid of local artists and students.

This highly politicised connotation made the political act at the Biennale the actual spectacle. Society has changed and the Biennale wanted to reflect such a transformation. It was an attempt of the Biennale to find a new relationship with the public, and to give a more democratic perspective to a cultural institution founded on promoting contemporary art to all classes of society.

These tensions brought up in the mid 1960s were played again in the following years when radical gestures and the notion of art in an expanding field were recuperated by the Biennale on different levels.

Conclusion

Despite the strong impact that politics had on the Biennale in the late 1960s and early 70s, which caused the immediate re-writing of the institution's charter, the long-term effects were by contrast minimal.

The big turmoil surrounding the opening of the Venice Biennale during the summer 1968 ended up soon leaving no big traces in the Biennale's internal structure. Le Parc's victory and the 1968 revolt casted light on the crisis of categories in art linked to the discourse of medium specificity, and they led to the disembowelment of categories and the official abolition of categories from the Biennale's charter in 1970.

Six years later the attempt of the Biennale to make a more radical and meaningful contribution to the art scene showed how politics could be used as the actual spectacle. What happened at the Biennale in the 1970s was an attempt to address to the society's changes and to modify the institution to allow the masses to access culture with the consequent spectacularisation of politics.

What kind of consequences did the 1966 crisis introduce to the Biennale? How did new media art affect the art institution? How to interpret social radicalism and new media art in the context of the Venice Biennale, particularly after 1968? How did the Venice Biennale come to terms with the concept of democratization of art?

Architectures of Play: The Will to Act

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From the hidden spaces of 16th century garden grottos and follies to the 1970s' temporary event structures, the architectures of play have been designed to engage novel phenomenological and social experiences. The uncertainty of play allows us to probe new behaviours, to poke the boundaries of our subjectivity and to interact with people, things and systems in unusual and new ways. How can digital technology support these playful purposes? The Fun Palace was an early attempt to use cybernetics in order to encourage visitors to challenge their habitual behaviours. It raised a number of issues related to the design of computer-enhanced playful environments. This essay explores how contemporary projects have addressed the same problems and goals.

Playground as social toy

Theatrical director Joan Littlewood imagined the Fun Palace as a public space for critical exploration of everyday life through play. She invited architect Cedric Price to design an architecture that would encourage playful activities. His proposal had no fixed form or plan. It was a flexible frame with movable modules. Rooms, walls and walkways were to be automatically re-arranged and resources such as sound, light and humidity allocated to create different spaces and atmospheres based on visitors' desires.

Such spatial transformations were to have been enabled by a cybernetic system designed by Gordon Pask whose task was to program an environment "capable of adapting to meet the changeable needs of a human population and of encouraging human participation" (Littlewood 1968). The retrieval of information about visitors' needs was based on the incessant tracking of their activities. Visitors could perform inquiries through the Pillar of Information, the only directly addressable interface, which was proposed by artist Roy Ascott. Based on gathered information, the cybernetic system would compare people arriving to those leaving the building causing it to change its shape.

The Fun Palace, described by Price as a short-term exploratory social toy, was supposed to raise visitors' awareness about ways in which traditional architecture shapes their activities and to unable them to participate in transformation of their surroundings. By contrast, its architectural changes were based on automaticity and surveillance, allowing for minimal direct interaction from the side of the visitors. By preventing voluntary action, design choices conflicted Littlewoods original goal of fostering participation and transformative behaviour.

Voluntary action?

As in the Fun Palace, contemporary interactive environments often capture visitors' actions without their will. For example, simply stepping into the installations by Camille Utterbach triggers changes of video image (Utterbach 2007). Visitors do not take a decision to act, as their every movement activates the response of the environment. This is partially due to the difficulty of recognizing participants' will to act from the side of computer. Intention is often oversimplified as the quantity of movement: if people move more, their will to act is inferred to be stronger. This limits the potential and complexity of participants' interaction with the environment and people in it.

To allow for such complexity, Foam collective has, in its work, combined software evolution models with distributed interfaces that are embedded into visitor's garments and their surroundings. Such physical interfaces require less attention then a video screen as they distribute the loci of activity throughout the space and matter. Participants in the installations such as txOom (Foam 2002) were enabled to focus on interacting with each other and on ways in which they affect the atmosphere, through shaping the sound, tangling in textiles, swinging in the air, etc. Nonetheless, immersed in rich sonic and luminous dynamics, they sometimes had difficulties identifying the results of their

own actions. One of the participants said: "…never was I aware of altering the environment by my own actions, which was a pity" (Boxer 2002).

While oversimplified mappings between activity and spatial behaviour allow for an easy understanding of the effects of ones actions, complex systems risk confusing visitors, who may not be able to perceive a response to their actions in the myriad of environmental changes. The latter are often interpreted as automatic behaviour of the system, as they cannot be understood as linked to other activity. In this way, participants do not feel responsible for the transformations of their surroundings; rather they are mesmerized by its evolution.

Tangibility

How can we design for participants' awareness of their influence on their surroundings? In the Hinge Dimension project (Franinovic, Wilson 2007), our goal was to enable citizens to voluntarily change a physical architecture of a public location. A church was filled with large screens that could be moved around a pole acting as a hinge. Participants could arrange their surroundings in labyrinthic and chaotic fashion, or organize it in clusters or corridors. Physical changes influenced spatialized sonic and light composition that reflected the changing potential for flow in the location (clustered, directional, diagonal, etc).

The Hinge Dimension environment responded only when visitors physically grasped its architectural elements. Without their intention to transform the spatial structure, nothing happened. The direct link between visitors' actions upon the architectural elements and the resulting changes in sonic and luminous atmospheres facilitated the understanding of the interaction. Having a clear sense of their actions, some participants did not explore the atmospheric transformations over long time periods, but focused on the immediate sonic and luminous response. However, in no case was the awareness of relations between oneself, the space and others in it lost.

I would like to conclude by suggesting that the participants' awareness can be facilitated through tangible interaction. When visitors engage with physical objects they have made a decision to reach into the world and act upon it. Their responsibility increases with tangibility: Throwing a digital image of a glass has a very different effect on the world from throwing a physical glass. By raising awareness of ones action, the responsibility shifts from the automatic system to the participants. Indeed, one visitor to Hinge Dimension described the sensation of "architectural politeness" caused by large-scale interfaces that made her more attentive to the environment and others in it.

The transparent relation between action and spatial response allows us to consciously act and it might be a step towards the self-critique of individual and collective action that Littlewood was aiming for. If our goal is that of providing context for transformative social behaviour, such clarity has to be an essential part of interactive experience.

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Voice in Electronic Art:
From Whistle to Speech Recognition

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Introduction

Voice interfaces, whether they are speech-only or multimodal, are a fascinating subject. The human dream of talking to computers in a natural way is not new. Science fiction books and movies that live in our imagination present several examples of this aspiration, like: *Star Trek*, *Lost in Space*, *Star Wars*, and *Blade Runner*, among others.[6]

Until recently, talking to computers was in the realm of fiction — the web has been largely mute and deaf. However in the beginning of the 21st century talking to computers has become possible and easy due the enormous advances in speech synthesis and voice recognition technologies as well as the open standards adopted by the W3C (such as VoiceXML). The accuracy level reached by voice technologies now has allowed us to use them widely on the web.

However, talking to computers adds "ears" and "mouths" to the Internet organism, changing the way we interact with it, bringing new possibilities and new challenges as well. We must face the increasing complexity that voice interfaces bring to the web while we also open new channels for digital inclusion, provide more accessibility and increase mobility through voice. All these things affect the human role inside the high-tech social structure we live in, at once causing excitement and fear.

In this context, we believe that artworks help people to understand and experience the new emergent techno-social world that surrounds us, where convergence and hybridization have become ubiquitous and easy, and "to talk to computers" is going to become common.

Electronic artworks & voice

Several electronic artworks have used voice in many ways — from whistles and blows to the state of the art in using speech synthesis and recognition technologies. Although the first experience with voice technologies was in the 18th century, only since the beginning of the 20th century has their commercial use really started and it was not until the end of the century, in the 1980s, that the first electronic art experiments with voice technologies were developed. Since then many electronic artworks have used voice in several creative forms. From the first voice experimentations in electronic art to the use of speech synthesis and voice recognition on the web — as we have nowadays — it has been a long journey.

According to Gabriel,[4] adding some recent works, the following artworks draw a brief panorama of interesting relationships between electronic art and voice, contextualizing the artistic development from the beginning (in the 1980s) up to now.

1986 - Synthetic Speech Theatre, by S. Wilson	2000 - Riding the Net, by C. Sommerer and L. Mignonneau
1989 - Barbie Liberation, by Ron Kuivila	2000 - Talk Nice, by Elizabeth Vander Zaag
1990 - Talking Machine, by Martin Riches	2001 - Living Room, by C. Sommerer and L. Mignonneau
1991 - Inquiry Theater, by Stephen Wilson	2002 - RE:MARK, by G. Levin and Z. Lieberman
1994 - Oh toi qui vis la-bas, by Don Ritter	2003 - Alert, by Barbara Musil
1994 - Speech Sculptures, by Bruce Cannon	2003 - Messa di Voce, by Golan Levin et al
1995 - I Have Never Read the Bible, by Jim Campbell	2003 - Summoned Voices, by Iain Mott
1996 - Le Pissenlit, by E. Couchot and M. Bret	2003 - Universal Whistling Machine, by Marc Böhlen and JT Rinker
1996 - Orpheus, by Ken Feingold	2004 - IP Poetry, by Gustavo Romano
1999 - Universal Translator, by David Rokeby	2004 - Voice Mosaic, by Martha Gabriel
2000 - Giver of Names, by David Rokeby	2005 - Organum, by Greg Niemeyer et al
2000 - Huge Harry, by A. Elsenaar, R. Scha	2005 - Tampopo, by Kentaro Yamada
2000 - Millennium Venus, by Sharon Grace	2007 - NetAura, by Giselle Beiguelman et al
2000 - n-Cha(n)t, by David Rokeby	
2000 - netsong, by Amy Alexader	

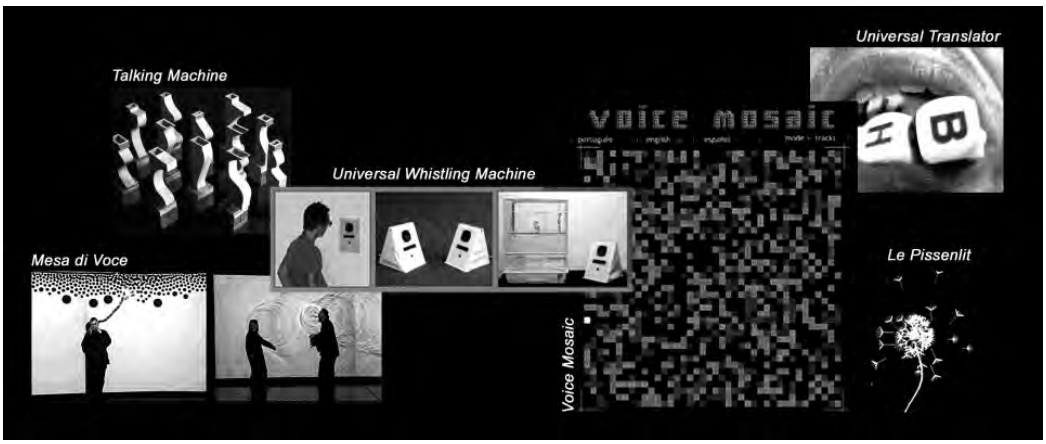

Figure 1: Pictures of artworks related to voice.

An interesting analysis of these works happens when we focus on the way they use the voice. In this sense we will point out some artworks, as follows (Figure 1).

Some artworks that implement **non-verbal voice as an input** are: *Le Pissenlit*[3] — uses the blow in a digital image (a dandelion flower) that dissolves; *Universal Whistling Machine*[2] — deals with whistle synthesis and recognition; *Talk Nice*[11] — speech recognition focused on pitch; and *Universal Translator*[8] — speech recognition for phoneme analysis.

As examples of artworks that employ the **verbal dimension of voice with speech synthesis**, we could mention: *netsong*[1] — uses speech synthesis to create a song based on the web links provided by a search on the web; and *Talking Machine*[7] — the speech synthesis is created by a physical system that imitates the human vocal system. We can observe some other technological trends influencing the artworks, as it happens with *netsong*: besides probably being the first artwork to use speech synthesis on the web it is deeply related with search engines — one of the most important and influential interfaces of our time.

Artworks that employ the **verbal dimension of voice with speech recognition** start with *Inquire Theater*,[10] in 1991. In this work, speech recognition is interpreted by a virtual navigation system in San Francisco. Another interesting artwork based on an algorithm that analyses speech transforming it into images is *Mesa di Voce*,[5] which is concerned with the poetic implications of making the human voice visible. We can also cite *Voice Mosaic*[9] as an artwork that uses speech recognition, however, instead of being a installation, the work happens on the web integrated in real-time with the telephone.

Conclusion

By analyzing the use of voice in electronic art we have seen that speech recognition is less frequent in the works than other voice technologies. Few artworks have explored phoneme-less inputs such as blows and whistles so far. Although whistling is a primitive form of communication, only in 2003 has an artwork explored it as an alternative way of voice-input and human-computer interaction. As seen above, before 2004 vocal-inputs in artworks were restricted to installations, which limited their wide. Now, the web and telephone have been the latest step these works have reached by using the state of the art in voice technologies.

From now on we think that it will be possible to provide wider and deeper experimentation with voice interfaces due to the available technologies integrating the web and telephone. We expect it will probably allow us all to break frontiers and go further in artistic/human possibilities and developments.

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Life and Art in Second Life

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Introduction

One of the many virtual worlds inspired by the cyberpunk literature movement, Second Life has attracted global attention since 2006 and counts today with millions of residents. Aligned with the Web 2.0 trends and considered by many as the best digital life at the present moment, the SL Metaverse gives flow to cybrid processes. In despite of the fact of not being a complete novelty — since 3D MUVEs (Multi User Virtual Environments) and social networks have existed for more than one decade on the web — Second Life brings several new questionings and possible influences in language and personal relationships that cannot be despised.

The objective of this paper is to briefly explore the new possibilities for expression and interaction provided by Second Life and other virtual worlds on the web, especially in art, and to bring reflections about their probable influence in the future navigation interfaces on the web. Some selected artworks in Second Life will be pointed out to illustrate the paper.

Life in Second Life

Living and expressing the self in a world where one can either follow or break the laws of Physics is a power never experienced before by the flesh and bones man. However, in order to allow an avatar live that freedom in Second Life (SL), his/her physical body needs to be seated in front of a computer in the First Life (FL). Everything seems to be possible and extraordinary, but nothing really exists in SL if there will not be a physical human body behind it, feeding and supporting the brain in FL. We could say it seems that SL provides a platform that gives flow to *The Matrix* (Wachowski, 1999) paradox.

It is still too early to conclude something deeper about SL or where this road leads. However, we are already feeling its effects and influences: SL is the 10th most popular virtual world, including online games (GigaOM, 2007). At any time there is an average of 30 to 40 thousand people connected and US$ 1 million circulates daily *inworld*.

SL is the Stephenson's Metaverse (1993) first embodiment: totally immersive 3D environment where humans interact (as avatars) with each other (socially and economically) and with software agents of the cyberspace, which uses the physical world metaphor but without the physical limitations. SL is not a complete novelty since in reality it is a mix, a co-existence of everything that already exist — games, economy, social networks, etc. However, we believe that it initiates a new engaging way of interaction.

There are some important aspects to be considered in the life in SL. First, the balance between breaking and following the laws of Physics — it makes the environment much richer than if it were just one or the other, conveying the surprise effect constantly. Second, the simulation functionalities give a new dimension to language, like: flying, teleporting and the several new view functions. Third, SL is like a playground environment — it allows social interaction and toys. The more toys a playground has, the more attractive it becomes to different audiences. Fourth, the essence of SL is social. The most popular places are those that involve the social aspect — meetings, classes, shows, parties, etc. Fifth, cybrid (Beiguelman, 2004) processes are potentialized by SL: the life of a person in SL is extension of his/her life in FL and they complete each other, widening the field of action of the being. We are increasingly living a 'Digital Life' simultaneously with a 'Life Digital' (Iskold, 2007). A very interesting art exhibition that explores the convergence — through cyberspace — of real and synthetic places is the Mixed Realities (Turbulence, 2008). Another example is the company Fabjectory (2007), which creates statues of objects and avatars that exist in SL, transforming them in things in FL.

Finally, we believe that the key-aspect of SL is that it gives a bigger power to the individual than he/she has in FL: a) power over himself/herself (appearance,

movements, views, etc.); b) power over the environment; c) power not restrict to the virtual environment (due to the cybrid process) and; d) power allowed to lay people, which is very important to get mainstream.

We suggest that these functionalities in SL that affect the language and behavior *inworld* tend to affect the language on the Web and the daily language in FL, too.

Art in Second Life

Figure 1: Screenshot of the artwork SKINdoscope SL

Several activities are favored by the SL environment, like: design, architecture, programming, modeling, teaching/learning, and art. SL provides a rich environment that allows either the reproduction of traditional art or interesting new experimentations, possible only *inworld*. There are several galleries in SL that present art in traditional style, like gif images to be used on the residents' houses. However there are also galleries like Throwing Stones Gallery and other spaces that promote interactive installations in SL allowing to explore the new possibilities and potentialities that the environment provides.

Besides the search tool *inworld*, some blogs and magazines like SLArt (2008) present the art activities *inworld*. Some artworks that exemplify the new potentialities are: *A Rose Heard at Dusk*, by Adam Nash; Abyss, by Sunn Thunders and Rezago Kokorin; *FlowerBall*, by Douglas Story et al; *PleaseWakeMeUp Idler*, by Sasun Steinbeck; *Lumiere Noir's exhibit*, at SL4B; and SKINdoscope SL, by Martha Gabriel (Figure 1). In the case of Lumiere Noir's exhibit, an artwork in form of a labyrinth amplifies the possibilities of interaction, if compared with FL. Many people are afraid of physical mazes due to the fear of getting lost or claustrophobia. In SL, an avatar can always fly or teleport immediately if he/her feels insecure. These abilities open for sure new channels for experiences and sensations that can be studied deeper.

Conclusion

Although in some ways SL is not a novelty as discussed before, in another way it initiates a new way of interaction. On the other hand there are still several limitations that prevent the SL language of getting mainstream, like: the need of appropriate hardware, the lack of access via a web browser, and the lack of social control, for example. Although these limitations are likely to be overcome in a near future, we are not able to predict if SL will keep being alive or not. Maybe other virtual worlds will become more popular or even overcome it.

However, we believe that SL has founded a new language and way of interaction, even if it doesn't survive. In the same way that ICQ has been overcome by MSN and other instant messenger systems, ten years ago it founded the instant messenger language, which is still alive, used and influencing people's daily language.

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Displacements of Creative Activity in Brazilian Visual Arts

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Displacements and communication

The Electronic Arts played an important role in the displacement of creative activity, which has traditionally been focused on the artist, that is, in the conditions of production of the works of art/artistic experience influenced by a romantic-modern perspective. However, at the beginning of the 20th century a process of actively including the spectator as someone responsible for the creative activity began, especially under the auspices of Marcel Duchamp. In this paper, we analyze some aspects of the above mentioned displacement in the pre-electronic art made in Brazil by Hélio Oiticica and Ligia Clark, passing through the telepresence and Interactive Arts of Eduardo Kac, up to the more recent Web-Art productions developed by the young Influenza. In order to help us during this historical promenade we will pay attention to the transformations and features that characterize the creative activity as the invention of a sort of communication. In other words, the art production is considered as a balanced relationship between artist and spectator resulting in a special communicability.

The displacement of the creative activity happens at least due to two motives: a) the decreasing importance of the artist as the only responsible for the creation of works of art or artistic experience leading astray the romantic path of the foundation of art on a theory of genius; b) the democratization of the concept of creative activity as including — more than only bringing closer — the spectator as a necessary part of the work of art conceived now as a communicational experience. The argument to be defended is that with the rise of Electronic Art in general — Computer based, Digital, Web, Virtual Arts, etc. — this displacement reaches an optimal position. Firstly, because the Electronic Art does not impose on the spectator the responsibility of completing the work of art, what can be found in some of Oiticica's works. Secondly, because it invites the spectator for an experience of art through the establishment of a kind of dialogue, as we can see in Kac's interactive works. Finally, because in Electronic Arts there are sufficient grounds to promote art experience through websites and/or file programs, as conceived by Influenza.etc.br in which works of art and art experience are waiting for an activation (by accessing or running) as "opera(c)tion" of a communicative experience.

The pre-Electronic Art: Hélio Oiticica and Ligia Clark

Ligia Clark and Hélio Oiticica are a landmark in the process of introducing spectators as creators. Exponents in the 1960's and 70's, such authors have sought for an understanding of visual art that emphasized the spectators's position, provoking them to participate and to collaborate in the construction of the work of art. Some of their works were mainly viewed more as happenings or performances than actually as objects: something like a "proto-immersion", an anticipation of digital immersion.[1] The spectator had to live and dance Oiticica's *Parangolés* (1965) and to manipulate Clark's *Bichos* (1958), *conditio sine qua non* for the existence of the art experience or the work of art. Both Oiticica's "Ambient Art"[2] and Clark's "Relational Objects" carried out an inversion of the place of creation, displacing its authorship from artist to spectator as Duchamp once suggested saying that the *regardeurs* alone made the picture.[3] In *A dança na minha experiência* (1966) Oiticica explains his ideas:

> Here is the key to what I call Ambient Art: the eternally mobile, the transformable, which structures itself by the act of the spectator.[4]

Both pre-electronic Brazilians artists anticipate the explosion of interactivity that happened in the Age of Electronic Art.[5] Their assumption was that the fundamental task of art is to involve the spectator, who becomes more and more immersed in the making of art. However, the forms of interactions were restricted to the available media. As time passed by, innovation of supports pressed and it was necessary to extend the range of possibilities of collaborations.

The Interactive Arts: Eduardo Kac

These limitations set the starting point for the works of Eduardo Kac. His first works on telepresence using technologies of communication in the 80's were surpassed with the introduction in the early 90's of new technologies of interactivity like the Internet. He had consistently developed the Oiticica tradition bringing new supports and technologies. His contribution, however, was larger than a mere inclusion of new materials and media. He was trying to increase and create new kinds of collaboration turning the spectator-artist exchange thought by Oiticica into a new kind of communication — *Ornitorrincovi* (1989) and *Uirapuruvii* (1996/99). He tried to radicalize the introduction of communication as a reality inside the creation process of Visual Arts. From now on, communication was not to be comprehended as data transferring, but as 'virtual dialogue': "...works of art created with telematic media are communication events in which information flows in multiple directions."[8]

And art here also becomes a communicative experience.

The Web Art: Influenza Group

Enlarging the path opened up by Kac, the young Influenza Group[9] increased through the Web(Art) the number of ways interactions and communications are possible. File programs install on users' Desktop skins through which spectators navigate the Influenza homepage. Hence it is possible to create a different determinate interface for each user connected, what results in a data mixing of the users/spectators opened desktop programs with the Influenza homepage contents. The starting point for an art experience can now be file programs or homepages. Simultaneously, virtual users become spectators interacting and building a different and productive-communicative experience between themselves and the artist.

Final notes

We can draw as conclusion that, in the context of the New Media, art is communitarian, i.e., produced by the artist with the spectator's co-participation. I do not believe that it works like a collective creation as can be seen within artists groups. What is to be underlined in this context is the necessity of communication, either between artists or between artist and spectator. The individuality of the artist remains quite the same, but it is now (counter)balanced. Thus, we recognize the place of creation in a balanced position in which the co-dependence plays the role once played by the figure of the genius alone.

The artist creates his or her work and is still responsible for its creation, but not exclusively responsible given that he depends on participation. The communicative process is special because it takes place only when the work of the artist is somehow operated by the spectator, who nevertheless is not obliged to make/interpret/remember anything[10]. The balance of this communicative process depends on how much information is made available: excess of information can drive the spectator, hindering his will, while lack of it does not allow the spectator to recognize the work as something to be operated. This is always the case when an artistic production has been displayed and nobody — or few — perceives that he or she is in the imminence of becoming part of an artistic experience. The creative activity understood via this balanced process and this special sort of communication keep spectator and artist side by side. The great challenge for the disciplines that are reflecting upon an art definition taking into account the New Media Art world is to understand precisely what the key-point of this communion is.

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Immersive Worlds, Artificial Life, and Systems in Unstable Equilibrium

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Immersive Worlds put forward a relationship with the sciences of complexity, that is to say, the sciences of systems which are not in equilibrium, which are based on the concept of emergence. This is understood as the way in which these systems are created; not from intuition, nor from any human intervention, but from computational instruments denoting independence from who ever generates it. We are dealing with different heuristics, the autonomy of the machine which systematically reorganizes information to produce the idea that something new has been created: artificial life.

Appealing is the relationship between the scientist and the artist, who share the same interest in the emergence of new realities, the creation of new forms of life. Artists propose new meanings starting from new instruments, the goal is to create new realities through new questions and new processes, allowing the artist to experiment with science by means of symbolic operations.

How can new and different realities emerge? To what extent is the world recreated with each interaction or intervention? The system would not be a representation of the world's evolution in compressed time, but rather a question as to how the world could be. Artificial life does not attempt to describe the world but rather to intervene in it by creating other realities from new instruments. Whenever this happens, immersive worlds acquire autonomy to modify themselves according to the dynamics of inhabiting a place.

In the *OP_ERA* installation created by Rejane Cantoni and Daniela Kutschat[1] exhibited in Brazil in 2003, they experimented with the possibilities of an abstract form of space and time based on the theories of fractal geometries and life sciences. "It is a CAVE for multisensory experimentation, designed as an inter-active immersive environment for virtual reality systems".[2] One of the main objectives is to design a multisensory experiment with different dimensions, focussing in the convergence of science and art. It is a form of experimentation and also a conceptual way to think scientifically the space and the time.

The four different dimensions of *OP_ERA*

The *OP_ERA* installation involves a universe made of four different dimensions.

The first one is a sound-based environment in which one enters blind, dependent for mobility and sensory experience on the sound interface. The second puts forward a geometric relationship in which the sound interface allows the creation of lines in the sense of length and width, creating planes which may be identified both visually and tactilely. The inter-actor (the spectator/observer/visitor) changes the environment with his/her movements and gestures which are connected to the sensors.

Whenever a visual or tactile inter-action takes place within the interface, a plane of concentric lines moves gently, outlining and opening a point of access, a small dislocation in the continuity of the visual space defined as a spatial border.

The concept of Kantian space (space with no limits), disappears or is transformed into the concept of inter-action with planes of light that defines the changing space. This planes are flexible and changing, however, the whole space is not completely transformed. It changes just enough to underline the possibility that it can be opened to intervention, the same as to a return to its initial state.

The third dimension relies on geometric shapes which dislocate one from each other in relation to the basic square in which they are immersed. The experience is based on a matrix of three basic forms: the square, the triangle and the circle, floating in a cubical space. A relationship is established between the geometric shapes, their mobility and the dislocation of them in the real space of the CAVE, which is geometrized as a geodesic shape. This, in turn, proposes a relationship with the mentioned cube and the geometric shapes moving around as a result of the interventions made by the participant and traced by the interface.

The Lorenz Atractor in the fourth dimension of *OP_ERA*

The first three dimensions are generated with Euclidian geometry, however the fourth one is created using the Lorenz Atractor, which claims to have all dimensions including that of time. "Perception consists in the understanding that the visitor is just a point in the space and time in motion, a single particle in the Lorenz Atractor."[3] The Atractor condenses the three earlier dimensions as well as their colours, moving like codes in fluctuating lines which mix and oscillate. This allows the visitor to perceive how his/her own body is drawn towards the Atractor, as if the inter-actor were just a point within this chain of dimensions.

The Lorenz Atractor is a mathematical non-linear model which shows the complex transformations of space and time arising from the self regulated and dynamic non-linear system (which is also non-deterministic). In this system the periodicity of repetition of events is neither evident nor causal. In this model, any insignificant external event can produce huge changes. This is a multisensory experience of one of the symbols of the theory of chaos which measures the movements of an inter-actor in a multidimensional space and time system. The main characteristic of this space and time system is the availability of the human interaction on a 1:1 scale, in other words, at the scale of human perception

OP_ERA fourth dimension is a representation of mathematics in movement, where the inter-actor understands him/herself as a part of the system. Although the visitor may try to operate the system to produce one effect or another, the visual presence of the Atractor produces an all encompassing perception which is further enhanced with the change in scale, including close and long approaches. An abstract mathematical representation, becomes here something to be experienced spatially, meaning that we can experience it with our entire body and with all our senses. This is possibly the greatest achievement of this work, as it expands the limits of human cognition through the use of science, technology and art working together and conducting us to a deeper search.

The Lorenz Atractor is used to measure a non linear dynamic system, in this case the human interaction. In other words the Atractor shows the pattern of the visitor's movements inter-acting with the experiment. A process of self transformation is undertaken with each interaction in real time. The system becomes a mathematical mirror image of these interactions from the sensorial point of view and according to the original programming. It becomes a mirror of the human being and an element capable of measuring his/her interaction, recreating permanently some images in an infinite fluctuation cycle. Thus, it records different periods of change, which are not evident to the human eye, but when they are examined closely, they reveal patterns of interaction.

It is interesting to observe how this is not about producing changes of an image which is external to the observer through interactive actions of perception and immersion, it is about creating a mathematical model of individual human interaction in specific conditions of a space and time such as a CAVE type installation.

In *OP_ERA* all events represent the human interaction but they do not show the visitor exact image in terms of shape, colour and texture. The case of *OP_ERA* is not a picture or a speculative image (in the optic sense), nor is it a mimetic or simulated image created by an avatar which performs human actions in a virtual world, and it is not a mathematical clone of human actions either. It is an image created on a mathematical model based on an equation in operation, it measures in real time the human movements in the same space and time framework.

The formal quality of the Atractor is not indifferent to the visitor. Here, there is a paradox: the Atractor, which is a measuring tool, a mathematical instrument is now presented to the observer also as an image with formal characteristics of colour, texture and movement. The Atractor presents a dichotomy: it is sensitive and formally impactful and at the same time it is an intelligible, abstract, mathematical, operational and purely functional model.

At this point the issue is not about measurement, it is about meaning. An Atractor does not only represent something but also operates in real time. It measures one of the most radical and dynamic systems known so far: the human actions. What it is really doing is displacing its function in order to liberate the sensorial experience in correspondence with a socio-cultural and aesthetic idea of the universe.

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1 See http://www.op-era.com

2 Ibid.

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A Virtual Modus Operandi

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Towards a new territoriality

New social uses of the Internet advocate a new territoriality; however, while the New Technologies have advanced positions towards social, geographical and economic autonomy, everyday life remains subjugated by the mechanisms that control urban space. Reviewing key discourses on spatial autonomy against emergent forms of autonomous production in the context of the New Technologies suggests the necessity to shift the production of value within disciplinary urban praxis towards the public's agency over urban space, and situates the emergent social dynamic as the framework to construct the new spatial value.

The social dynamic of our current technological time is ever more geared towards public autonomy. Yet, rather than appropriating urban space through virtual tools, new media users have successfully applied the "tactics of living" to the less regulated virtual environment. Influential Urban discourses of the past decades, from Michel de Certeau's "tactics of living", through Lefebvre's "space as a social construct", to Bakhtin's subversive carnival, imply that the production of 'habitable' space requires the user's autonomy over its control and production entailing an essentially cultural, (not necessarily material, subjective and collective), and tactical (unintentional, adaptive and elusive), process; Meanwhile, in the current context of globalization and neo-liberalism, New Media theorists are speculating on the potential of the New Technologies to empower the user in and in-between all fields of life, political, economical and geographical. Hence, inspired by both these trends urban thinkers and activists have sought in New Media effective tools[1] to subvert dominant spatial politics. Indeed, the New Technologies have delivered a decentralized intelligence of social networks reminiscent of Certeau's "tactics of living", which he has described as an "unmappable" form of subversion without a specific site of operation, strategy, or ideology. However, its application to urban space has remained at the level of activism with a political agenda; i.e. land speculation continues and borders abide. In that order, politically driven uses of technology such as during the 1999 protests in Seattle, or the 2001 series of events in various cities around the world, digress from the premises of previous urban theorists whose main concern, far from ideology, is the experience of everyday life. If technology has caused an unprecedented efficiency and momentum towards the autonomous production of space, it is the "ordinary practice of everyday life", in Certeau's words, that still describes the modus operandi of a cultural spatial praxis encompassing both, virtual and tangible space at the bases of urban life. Yet today, the possibilities for autonomy are much greater in the virtual realm.

Between the ordinary and the disciplinary: A new economy of place

This discrepancy suggests the necessity to invert spatial use value from the object/product to the production process, notably 'Architect's concepts' vs. 'autonomous production of space'. Michael Hardt has argued that the implication of autonomous production in capitalist structures augments their capacity for subversion without necessarily compromising the anti-capitalist project; after all, without ideology or strategy, the practice of everyday life escapes the very category of 'project'. Besides, while it may be true that there is a growing interest in alternative free networks and open source software, their likely implementation amongst computer programming literates is not comparable with the ubiquity of the Web 2.0. In fact, it is the architecture of the web 2.0 that has put into value the participation of the user in the production process, thus impelling the corporate players, such as Google and Yahoo, to invert their mechanisms of production and delegate control in order to profit from the new and relentless modus operandi. Similarly, disciplinary urban praxis could be revised to valorize, and ultimately affirm, city-dweller's autonomy over spatial production.

Outside the disciplinary urban, while deeply involved with everyday life and the locations where life take place, the attitude in some forms of experimental Japanese

Figure 1: Kawanaka, Nobuhiro. 1987-1996. Shishosetsu. Tokyo: Image Forum

documentary can help intuit the modus operandi of a revised urban praxis vis-à-vis public autonomy. In discussing its methods as spatial tactics, disciplinary means of spatial valorization, such as the concept and the strategy, are questioned through notions of participation, subjectivity and indeterminacy underlying the ongoing discourse on the cultural production of space.

Likewise Lefebvre's inversion of the productive hierarchy, Filmmaker Kazuo Hara swaps positions between agent and subject to the extent that the subject assumes the control of the aesthetic of the film. His documentary does not aim at establishing the Filmmaker's standpoint, but to provide the conditions for change in relation to an undetermined course of events. He explains: "I become the receptor of the action and its evolution as it takes place in front of me. The act of filming and being filmed cannot be separated".[2]

Analogous to Bakhtin's carnival, more than act of fakery, Kawanaka Nobuhiro´s aesthetic manipulations perform a celebration of time and place. Continuously filmed, re-edited and re-projected over the years his documentary constitutes a mediated memory-work, which produces a social bond and sense of place. The footage, including both public and private events, is projected to a returning audience of friends, colleagues and newcomers. Like Lefebvre's "social construct" the process entails the collective construction of a virtual memory over time, whose origins may or not have ever been experienced by members of the Audience.

Lastly, Oki Hiroyuki employs de Certeau's tactics of living to construct a map of possibilities of the places he visits. It is in his personal perspective and attentiveness to the unexpected of everyday life that he reveals and projects latent and new aspects of the social context. The outcome of a productive exchange with the locals, inhabiting a place and documenting it become essentially the same thing.

Figure 2: Kawanaka, Nobuhiro. 1987-1996. Shishosetsu. Tokyo: Image Forum

As well as an attitude to re-valorize space, these practices can help intuit a properly tactical use of the New Technologies towards an evolving urban praxis, located between the ordinary and the disciplinary. In conclusion, if on the one hand the New Technologies, along with the collective appropriation of virtual space, have inspired equivalent possibilities and expectations with respect to the urban environment, the successful application of the same technologies to mediate public control over urban space may entail a whole new economy of place, centered on the practice of everyday life.

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1 E.g. Internet trends, like Web 2.0, VoIP and Geoweb; network dynamics, such as free networks open source code, and Tactical Media; locative and visualizing devices, like mobile phones, GPS and digital cameras; and their hybrids, blogumentaries and smart-mobs.

2 MacDonald, 178

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Folded Space: How Computer Games Rework Our Ideas of the Maze

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Mediaeval, Modern, Digital

> *"Unlike a Platonic idea, the kind of idea I'm talking about is not "true", universal, or immutable; like other human ideas, the idea of the labyrinth is subject to temporal change, the most marked change occurring in post mediaeval times, when the presence of false turnings and repeated choice become the labyrinths dominant characteristic."*[1]

In one of the essential texts that discuss the cultural significance of the maze or labyrinth (what we have called the 'folded path'), Penelope Doob argues that the 'idea' of the maze changes significantly as the Mediaeval world becomes the modern world. By 'idea' she means both the materiality and sensual experience of a maze object, and the broader cultural resonances of the maze. The way, for example, the maze metaphor permeates and shapes cultural thought, interpreting and structuring the world and experiences of it. For Doob the shift of the Renaissance, from Mediaeval ways of thinking and doing to Modern ways of thinking and doing, is evidenced clearly in a shift in the idea of the maze. In a similar way we wish to argue here that the change from Modern to post-Modern, from pre-Digital to Digital, from a manufacturing to a knowledge economy (however it is you wish to label the recent and current significant changes of an increasingly globalised culture), is also marked, and in part mediated, by a shift in the 'idea' of the maze that is both characterised by and in some part mediated by the ways in which interactive texts both employ and deploy the metaphors of mazes.

Where Doob looks to the artistic products of Mediaeval European culture, to the written, painted, sculpted, gardened and other texts of a broadly popular culture, we look to similar texts in the contemporary world, to computer games, to interactive imagined worlds. We will not labour a claim that the printed book, particular garden layouts, perspective paintings, etc were the exciting new technologies of the Renaissance and so may equate with the arts of digital displays and interactive decision technologies. We will not labour that, but it will float through much of what we say.

In our terms, Doobs 'idea' of a maze is a set of signs. Physically mazes are folded paths, highly organised, highly constructed, highly artificial configurations of form and substance — in a kind of reverse Creationism, no maze could arrive by accident, they announce that they are man-made and so threaded through with significance, even if their meanings escape us.

The worldly-maze relies, often, on visual and spatial confusions of many kinds. Low affordance surfaces, space and configuration, vertiginous twists and turns, etc. Although the maze puzzles of computer games adopt and exploit many of these strategies there remains a significant difference between the *pathways to* in the virtual and the *pathways of* in the embodied world. In part this is because worldly mazes suffer entropic change — inadvertent, accidental and co-incidental events leave their marks, whereas the game-maze is invoked identically on each of its instances. Worldly mazes are thinly spread and rarely experienced. Geography and occasional visit contribute to their ritual power. However, the game-mazes are near ubiquitous, readily available, easily accessed in their daily play across the planet. This familiarity dilutes the potential for ritual, reframes our experience of exploration. Where the age-old physical maze addresses many cultural activities and functions from ritual to play, from threat to entertainment, the computer game adopts the traits of the maze as a puzzle, seeking to contradictorily both engage the player and delay the action and its rewards.

Game Mazes, Space, Change

In general, two distinct 'ideas', fold paths, create mazes, in videogames:

- by having multiple fixed paths restricting movement, yet making the space appear larger.
- by being generative or emergent, allowing for differentiation with each play.

'Pac-Man'[2] is a key example of how fixed and generative mazes exist in one game. The walls/boundaries of 'Pac-Man' are fixed. The player cannot change them, they act as a map, outlining on screen where the player can and cannot go. Within the fixed maze walls, the pills reinforce the structure of the path in the game, showing the player the routes they can follow by collecting them. Collecting the pills change the movement along the bounded paths, creating further maze-like routes, ones that are different from the mapped out maze boundaries. These pills add another dimension to the game. It is these that are the emergent maze of the game, within the fixed, bounded walls. The pills can be collected in any order, collecting and disappearing whilst the player is battling the arrival of the ghosts. The pills, ghosts and 'power pills' work together to form maze structured paths, creating dead-ends, changing the direction of 'Pac-Man', and changing the end point of the goal of each level.

As technologies progressed, and three-dimensional games started to be developed, maze designs could again be used to make explorable areas appear larger to the player. The use of corridors offering maze-like paths, through early 3D games such as "Doom',[3] helped to confuse and lose the player in their environment. Rollings and Adams define a maze in computer game design as, *"… an area where every place looks alike, or mostly alike, and the player has to discover how the places are related to get out, usually by wandering around"*.[4]

This act of using the maze as a way of delaying the action also allows for making virtual spaces appear larger than the technology allows, through prolonging the players experience in the act of exploring and figuring out the puzzle. Concepts of space are diluted through identical texture mapping to make relatively small spaces appear larger. This can confuse the player making them spend more time in one particular place although they are constantly moving around.

Conclusion

Our discussions about mazes, labyrinths, or 'folded paths', have been wide reaching. In order to present those thoughts in even the most cursory way, we set out them out as in Table 1. We have no space here to explicate the table, but leave it, a little maze like, perhaps, for you to thread a path of some kind through it. You are asked to forgive us our generalisations; the broad sweeps of thoughts put down so simply.

Table 1: Characteristics of mazes in mediaeval, modern and post-modern contexts

Mediaeval	Modern	Post-Modern, Digital, Information Economy
The Troy (turf cut)	The hedge (gardened)	The Game and other interactive media
Unicursal	Multicursal, the bivium of decision	Rhizomaticursal - polyvial
Pathways of...	Pathways between...	Pathways to...
Ontological - about being on a path that has only one end	Existential - about choosing the path and bearing the consequences of those decisions	... the consequences of represented paths
Durational, endurance Central, pr peripheral, an inevitable destination, possibly reversed, or inversed as a way out	Spatial, Coals, solutions, knowing the secret	Puzzle, Rewards, power-ups, on-the-way collecting
Lost within the turning of the single path	Lost by the confusion of decision making	Lost by many means, tmetic anxieties, plurality
Open to the inward view of others, able to view others	Occluded views in both directions... hidden secrecies	Virtual views and plural viewing... inhabited by avatars
Public	Select Group	Private
The commons	The garden	Machine space in a private room
Mediaeval mind set	Modern mind set	Post modern mind set
Metaphors for the universe	Metaphors for life	metaphors for texts
Geo-spatial, symbolic and ritual values traded through placedness	Geo-spatial, status trade through ownership of space and resources	Post-geographies - virtualised spatiality, a social rather than a ritual trade of values
Rare, infrequent, travel to experience. Pilgrimage	Rare, pleasure garden spaces, partly 'domestic', partyle touristic	Everyday (with the privilege of technology access). Ubiquitous yet virtual.

1 Doob, P. 1990. *The Idea of the Labyrinth from Classical Antiquity through the Middle Ages*. Ithaca: Cornell University Press, p. 2.

2 *Pac-Man.* 1980. Namco.

3 *Doom.* 1993. id Software. GT Interactive.

4 Rollings, A. and E. Adams. 2003. *Andrew Rollings and Ernest Adams on Game Design*. Indiana: New Riders, p. 231.

Peripato Telematikos

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Abstract

This paper describes my current project "Peripato Telematikos", an experiment in social cartography and public authoring, drawing influences from peripatetic art practices. The project relies on public participation to 'map' a locale or neighbourhood. The mapping process requires participants to undertake guided walks and use a mobile phone to send images of interest during the walk. The images are sent to a custom hardware and software system. Once approved content is immediately available for viewing and manipulation through an web start application at the website http://www.peripato.net. The applet implements an experimental interface developed by the Human-Computer Interaction Lab (HCIL) at the University of Maryland that allows 'zooming' of all content. This allows the content to be manipulated by visitors to the site, allowing for an emergent montage of media elements.

Introduction

This paper describes my current project "Peripato Telematikos", an experiment in social cartography and public authoring, drawing influences from performance studies and art.

> [T]here is a cresting wave, and it awaits skilled surfers (Cosgrove, 2006)

This is a quote from a 2006 special issues of Cartographic Perspectives (the journal of the North American Cartographic Information Society) on art and maps. The special issue gives a good summary of the current intersections of art and maps and notes its prevalence but also signifies the importance of the work being conducted in these intersecting fields. It also asks why this might be happening.

Concept

Map making has a long and complex political, social and cultural history. Maps have long been used by controlling forces as a means of consolidating their power. The mapmaker controls the territory that is being mapped, and attempts to represent with a "totalising eye" as de Certeau (1984) asserts in "The Practice of Everyday Life". But maps can no longer satisfy the needs of representation in an increasingly complex and ever-changing world. Representations of the world rapidly become obsolete and inaccurate. But what is needed? Can a map incorporate time? How do we avoid creating representations that encompass all that is problematic with traditional map making?

What is emerging is that maps are not being used to represent reality but to construct reality through the interventions of people.

> As Deleuze (1988) says, a map is "an abstract machine. It is a machine that is almost blind and mute, even though it makes others see and speak" (34). The map is a machine oriented towards experimentation with the real. It is "abstract" because the map in no way represents what is actual and determined, but instead offers a field of potential space, an array of potential uses of the actual. It is a "machine" because of its ability to bring heterogenous elements of a system into connection with one another. The map is software in this sense. (Kanarinka, 2006, p25)

There are many projects where the intent is to imbue maps with personal, subjective information or content to convey more than the official and trumpeted objective representation of place. Many of these representations solicit public participation for their creation and hence are authored by the public. The research has revealed the activity by media artists, many drawing influences from the Situationist Internationale, an influential collective that explored and critiqued the urban environment of Paris, creating experiential maps from their experiences or 'derives' and coining such terms as 'psychogeography'. Assisted by the emergence of wireless technologies and

cheaper and more accessible GPS capabilities, and open source online tools (eg. google maps) many projects seek to create these representations assisted by the technologies available.

> Cartography is the study and practice of making maps. [...] Maps are inherently problematic. First of all, they assume an "objective" reality: a version of the world that can be inscribed, framed, and trusted. […] The second fatal flaw of maps is that they have been used, throughout political history, as weapons in political power struggles. […] Maps are drawn by the dominant power, and that is why they're such powerful documents. It's also why they're so dangerous, and it's why the recent movement by artists to reclaim cartography is of such enormous importance. (TPW Gallery 2007)

The project relies on public participation to 'map' a locale or neighbourhood.

The use of participants to create a work is by no means a new idea and has many precedents in art. From the early surrealist experiments in collaborative authoring to more recent phenomena such as the plethora of what are called web 2.0 applications, which mostly rely on public contributions. But what is to be gained from allowing the public to author these maps? As the places being explored and documented are the spaces that the participants frequent, it is their perception and concerns of their locale that is important. Furthermore, as Kanarinka states:

> The collective can be thought of as an explicit act of cultural resistance in that the group functions as a refusal of an increasingly engineered individual subjectivity. (Kanarinka 2006: 28)

The mapping process requires participants to undertake guided walks and use a mobile phone to send images of interest during the walk. A few images per participant can be sufficient but this is dependant upon the number of people involved and the area covered. For example, in the work "One Block Radius", a single city block in New York is 'mapped'.

> A project of Brooklyn artists Christina Ray and Dave Mandl (known collaboratively as Glowlab), is an extensive psychogeographic survey of the block where New York's New Museum of Contemporary Art will build a new facility in late 2004. Engaging a variety of tools and media such as blogs, video documentation, maps, field recordings & interviews, Glowlab creates a multi-layered portrait of the block as it has never been seen before [and will never be seen again]. (Glowlab 2004)

The mode of walking is informed by walking practices from art. This is not enforced (and could not be in a work that is open to anonymous participation) but is drawn upon where the walks are conducted in a more controlled situation, such as personal walks, workshops or other focus groups.

They are collected using a mobile phone with a camera and MMS capabilities. Usability has become an issue. This need has been addressed by:

1. Making use of mobile phones' MMS capabilities. Other dedicated applications that would serve a similar function are problematic. The multitude of mobile phone platforms represents a significant barrier to creating a single mobile phone application to facilitate the sending of images to a server. In order to maximise potential participation, a standard facility (i.e. MMS) is used.
2. Despite this, a suitable application is in development and will allow for the uploading of an image from the phone to a server. There are a number of reasons as to why this is being pursued. In many instances, the project will be run in more controlled environments, where customised mobile phones will be provided for the participants that will allow the uploading of images, with less user intervention than is possible using MMS. A custom application can also be considerably cheaper to use than standard MMS. MMS costs are fixed regardless of the content being sent whereas a custom application can use other means to keep costs down.

I have chosen walking as the prime means of exploring place and space. This draws on my research of art practices that somehow incorporate walking as a means of expression. Why walking? In order to gain some knowledge of our places, there is simply no other mode of locomotion that allows for an intimate experience with our surrounds. Walking in art can be traced back to include such luminaries as Baudelaire ("the botanist of the sidewalk") and Benjamin (Arcades Project). More recent examples include Richard Long and Hamish Fulton for whom

walking is primary in their art, Sophie Calle, whose "Suite Vientiene" is a well-known work where she stalked a stranger and Marina Abramovich and Ulay (The Lovers), who walked from opposite ends of the Great Wall of China as a parting gesture to mark the end of their relationship and collaborations.

In more recent times, the prevalence of art incorporating walking in some form can be ascertained by the number of conferences and exhibitions being held worldwide. For example:

1. Walking as knowing as making // a peripatetic investigation of place spring 2005 // university of illinois
2. Conflux is the annual New York festival for contemporary psychogeography.
3. Walk Ways brings together a selection of works by a diverse group of artists who explore the theme of walking as an action and/or as a metaphor.

Technology

The images taken by participants are sent immediately via MMS or the custom application, to a custom hardware and software system, comprising a gsm/gprs modem, sms/mms gateway software, php scripts and a mysql database.

MMS is an acronym for Multimedia Messaging System. Similar to the more commonly used SMS or text message, but with the added capability of incorporating images, audio and video content in a single message.

All entries are stored in a mySQL database and await approval. Approval of images before they are released into public realm is a major consideration during these times of heightened anxiety about the use of mobile phones for capturing unsolicited images.

> Photographers' blogs are tangled with long threads of discussions about what may or may not be allowed, and are bulging with stories of police, security and members of the public stopping them from taking photographs. (Giles 2007: 23)

The images need to be vetted for appropriateness and suitability. A secure web page is provided for administrators of the project that displays the image as it is received in real time, and provides a simple mechanism for approving the image. Once approved, the main viewing page loads the image from the database. The main viewing page will load the image as it polls the database at regular intervals to check for newly approved images. Once approved the images are immediately available for viewing and manipulation through a web start application at the url http://www.peripato.net

The application allows for the participants to return to the site and view their submitted images, and manipulate this content in relation to other content, closing the loop by giving control of look of the 'map' or montage to the participants. The content can also be manipulated in further ways: Text annotations can be added to existing content, links can be created, associating content with other content, and the spatial layout can be saved.

In a nutshell, this scheme allows the content to be manipulated by visitors to the site, allowing for an emergent montage of media elements.

The applet implements an experimental interface developed by the Human-Computer Interaction Lab (HCIL) at the University of Maryland that allows spatial manipulation and 'zooming' of all content. (Human-Computer Interaction Lab)

Thus far I have discussed the most visible aspects of the technology enabling the project. Other components that play a crucial role include: the gsm/gprs modem, the sms/mms gateway software (nowSMS), many php scripts to handle content and the mysql database.

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Invisible Signs

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Sign *n: something that indicates or expresses the existence of something else not immediately apparent.*[1]

This paper represents the first theoretical reflection of 'INVISIBLE SIGNS', a practically based body of research currently being undertaken by Lawrence George Giles in the cities of Liverpool & Manchester, England.

There exists an almost ubiquitous prevalence of signs, signage and information graphics throughout our society, whether this be information signage, such as a notice that instructs, advises, informs and warns or commercial signage which is designed to inspire recognition, familiarity and affiliation with the viewer. Indeed the unconscious way in which we receive, digest and understand these has become almost second nature, resulting in these signs of symbolic meaning becoming almost 'invisible' to us within our daily landscape and everyday experience.

A key premise of this research therefore surrounds the apparent natural acceptance of these everyday emblems, whilst endeavouring to challenge and question the apparent custom of daily receipt of these insignia via the subtle visual distortion of these cultural symbols.

Import here is placed upon the field and use of photography in order to visually reflect upon and illustrate the ubiquitous nature of the physical sign within society, whilst particular interest and focus relates to the way in which we receive, digest and understand these transmitters of meaning within a public arena in relation to the receiver's response, relationship and ultimate reading and understanding of the same.

Research context

Inspirationally the proposed body of work draws upon a series of existing influences and bodies of works which relate to these stated themes and which can be evidenced within the likes of the practice of John Baldessari, Gregory Crewdson, Tom Hunter and Felice Varini.

In particular, credence is placed upon the artwork of Christopher Steinbrener and Rainier Demf's entitled 'Delete!' and the significant role in which this work questions of the use of the sign within a public setting by placing question marks over the subjective denotation and connotation of these everyday emblems.[2]

In this project artists Steinbrener and Demf covered every single piece of advertising on the Neubaugasse, a busy commercial street in Vienna with a yellow covering, resulting in a two week period in which all advertising signs, slogans, pictograms, company names and logos disappeared.

This 'restructuring' of the environment effectively resulted in a shift in the space between reception and perception of these urban transmitters of meaning and via this process raised questions as to the dominance and significance of these purveyors of meaning within a public domain. In an analogous yet distinct manner Invisible Signs attempts to reflect the interests, reasoning and rationale which resonate within the likes of works such as Delete, whilst additionally attempting to raise questions as to their use, function, interpretation and meaning as part of our everyday experience.

Focus here relates to the physical and metaphysical 'support' for such mechanisms or devices and the impact that these have visually when this is removed, therefore resulting in these geometric bodies becoming more evident carriers of the written and pictorial signals, which, in many ways might normally evade our conscious perception.

Interpretation & meaning

There are three main areas via which we construe meaning in relation to these physical signs; the signs themselves, the way in which they are organised into systems and the context in which they appear. Emphasis is therefore placed upon the paradigmatic fields of two distinct yet thematically linked systems or signifiers, namely way-finding and promotional signage systems,

themselves part of the greater paradigm of public information graphics.

The two dominant models of what constitutes a sign by the linguist Ferdinand de Saussure and the philosopher Charles Sanders Peirce act as the basis for the locating of this project. Invisible Signs however draws upon a more materialistic interpretation of the 'dyadic' or 'triadic' models proposed by Saussure and Peirce for its foundations whilst reflecting and comparing these towards Barthes positioning or relationship of the reader in the exchange of meaning and content.[3] Additional significance is also drawn from the principles of advertising in relation to the promotional attributes of successful message delivery systems in relation to promotional signage systems.

As such Invisible Signs is sited across two divides of theoretical and practical interests namely;

1. Theories of advertising; those mechanisms used to employ, promote, display, instill and sell

2. The field of visual semantics in relation to public way-finding signage; their relevance, import, significance and meaning in relation to expected norms.

With regard to this stance/posture there exists two individual yet interconnected structures via which these two signage systems could be said to function, themselves sharing a particular series of commonalities or 'agents' within their specific structures. (Figures 1 and 2)

Figure 1: **Agents of communication: Advertising**	**Figure 2:** **Agents of communication: Semiotics[4]**
1. The sender (who)	1. The sender (who)
2. The message (meaning)	2. Intention (aim)
3. The medium (by which means)	3. Message (meaning)
4. The receiver (to whom)	4. Transmission (by which means)
5. The response of the receiver (with what result)	5. Noise (with what interference)
	6. Receiver (to whom)
6. The feedback or interaction	7. Destination (with what result)

Particular focus, however, is given to the significance of the 'intention' of the message and how this reverberates and effects transmission and reception once a visual disruption or 'noise' has taken place. Emphasis here relates to the reaction, interaction and feedback of the receiver once this 'interference' has taken place.

In Invisible Signs, it is the 'poles' or 'physical' support structures themselves that act as metaphysical support systems. Without these the conventional rendition or paradigm of the signs themselves, along with their intended meanings begin to shift, blur and change.

If there is a specifically symbolic side to language, it is on the side of the signifier whereby each element takes on its value owing to its difference from other elements within the chain like structure.[5]

The introduction of 'noise' or 'change' offers up an opportunity to re-reflect upon the nature of these signs in relation to their position, prominence, impact and analysis and by doing so affords the reader a greater sense of 'choice' as to their relevance, importance, significance and interpretation. It is this extended 'choice' which is central to the overriding remit of this body of work, both in relation to our acceptance and understanding of these signage systems and in relation to the shift in meaning via this introduction of 'choice'.

> The important thing to remember is that where there is choice there is meaning.[6]

The premise therefore is that the general arbitrary nature of these emblems and their connotation (via the introduction of this visual 'noise') begin to 'open up' whilst at the same time raise and re-focus questions as to the meaning/interpretation, brought to the image at this stage in the process. By doing so this increases the denotative aspects or reading of the resultant sign/signifier for the reader/recipient.

Meaning is therefore re-generated from the combinations, relationships and transformations of different elements within the symbolic context and via the subtle shift in visual perception introduced by the author/creator of these works.

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1 *Cambridge Advanced Learner's Dictionary*. 2005.

2 Steinbrener, Christopher & Demf, Rainier. *http://www.steinbrener-dempf.com/delete/index.html*

3 Barthes, Roland. 1968. *Elements of Semiology.* Cape.

4 Hall, Sean. 2007. *This Means This, This Means That*. Laurence King Publishing.

5 Leader, Darian. 1999. *Modern Thought*. Harper Collins.

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The Distribution Revolution:
A Global Recalibration of Media Production, Ownership, and Economics

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Eight years ago, the millennial odometer clicked over and the doomsday predictions of collapsed computer systems dematerialized like RAM data on a restart. At that time the corporate mandarins of the self-canonized music industry were locked in what was deemed a life-and-death struggle against the evil forces of peer-to-peer file sharing, incarnated in Napster, Inc. How peculiar and ironic it seemed to watch the incorrigibly exploitive recording industry lament being taken advantage of. Had music labels not screwed musicians and artists for most of the 20th century? Were the corporate labels not simply getting their just dues, and might not peer-to-peer distribution be the dawn of a new era for musicians?

Opposite the music industry stood Napster's free distribution of music and the questions its presence posed. If no one is paying for music, how will musicians and composers get paid? What will happen to music? Should people not pay for product? Should creative works produced from a lifetime of dedication to the arts — or even on a creative whim for that matter — not be justly paid for?

A three-day recording industry conference held at California State University, Chico, in 2000 included panel discussions between Napster representatives and the Recording Industry Association of America (RIAA) — the legal arm of the music industry. Attendees of the gathering got to see first hand where creative artists stood in this battle of evil against evil.

After three days of discussions and watching the two opposing interests joust and debate, a noticeable pall and unease crept over the musicians and composers in attendance. In the hallways during breaks talk revolved on how *not once* had either Napster or the RIAA discussed the artists. *Not once* had they talked about what was at stake for the performer or the writer. *Not once* had either of them mentioned the interests of the people whose plates they were eating from.

There was a strong sense among the conference attendees that if this conference represented the breadth of the discussion, then the only absolute that could be determined with confidence was that the musicians, artists, writers, and composers of the world would for the duration of the upcoming century continue to get screwed.

During the second half of the 20th century the recording industry consolidated its music production monopoly. If a musician wanted to record music that more than a dozen people would hear, he or she needed to be "chosen" by the industry. Under this strict control of production it developed that there was no need for an open music distribution system: since only industry titans were producing, only industry titans needed to distribute, so the industry took control of distribution as a side project.

Since the early 90's, however, the personal computer has progressively democratized the means of production for music. Today, any kid can sit in his dimly lit bedroom and produce high quality recordings, ready for sale. There has been a parallel production revolution for digital video running just a few years behind audio. Marx must be dancing in his grave — to an iPod, most likely — as the multi-million dollar means of production houses find themselves competing with tools bought off the shelf at Circuit City.

On the heels of this means of production revolution, Napster arrived with a blind-side kick to the head of the music industry's side-monopoly, means of distribution. The internet was still too slow for the larger sized video files, so the initial fight was to be waged over the smaller audio files. Too late to prevent the kid in his bedroom from producing high quality music, the industry sought to retain control of the market by preventing that kid from *distributing* his work. "He can't be stopped from producing, so let's stop him from selling."

This obstruction of distribution can be seen most clearly in the industry's refusal to create a trackable revenue model for internet distribution by the common person — i.e., a publicly available watermark and auto-pay system

that can track and charge for downloadable or streamable files. The industry instead focuses on proprietary control systems while fighting fierce legal battles against net distribution at corporate and consumer levels, suing peer-to-peer software designers along with teenagers and grandmothers with copyrighted ditties on their hard drives. The industry's message has been simple: buy the CD from a store at the price we dictate or we will sue you.

For several years the digitizable industries have struggled to prevent a publicly useable, revenue-configurable distribution system from coming into play. The problem in a nutshell is that if Jimmy can yodel an amazing rendition of 'Mary Had A Little Lamb' and distribute it online using a nickel-per-listen payment model, his revenue stream becomes independent of the middle-man industry. Great for Jimmy; bad for the industry. At a million hits — a not uncommon number on YouTube — Jimmy could yodel himself $50,000 towards his college education. The industry, still charging a-buck-a-song, needs the 95-cents of gravy to survive. Jimmy does not.

Compounding the industry's problem of (lost) control of means of production and distribution is an attendant shift in the aesthetic of production qualities. Hissy music and pixilated video are creating a new aesthetic sensibility with a fast growing audience. There is an immediacy and directness found in home music and video that can trump the cumbersome and excessive gloss of multi-million dollar studio work. This shift in content aesthetic can be compared to the response of late-70s punk music to the over-ripe production schlock of mid-70s arena rock. We might call this new sound and picture aesthetic 'neo-proletariat punk.'

It was bound to happen and the Apple Corporation got there first. Using iTunes and the iPod along with negotiated contracts with members of the RIAA, Apple began selling downloadable music at old-market valuation — a buck a song. The RIAA bought in to the deal because Apple offered restrictive data encoding and the industry just could not resist making equivalent profits for distribution without production. The iTunes system is rife with problems: its AAC compression technology is proprietary, the inflexible pricing structure of $1 per song is industry dictated, and its catalogue is music label based — no home production music without a so-called "legitimate" label contract is allowed. But despite these malignant shortcomings the iTunes structure has nevertheless managed to move the industry one balky step towards online distribution.

Comcast, Inc.'s efforts to bring relatively fast broadband to the average home — and not that piddly DSL stuff, either — laid the groundwork for YouTube, where more than 100 million videos are watched daily. While the "open pipe" world of live, real-time data flow is still a few years off, the simmering hunger for the next level of content — video — is clearly seen in the willingness of tens of millions of people to watch pixilated approximations of life in a 3x2 square on a computer screen.

In August 2006 the New York Times reported on the mysterious guitarist "funtwo" whose video of himself sitting in his bedroom playing Pachelbel's Canon had been posted online by a friend. At that time the young man, who turned out to be a 23-year-old Korean named Jeong-Hyun Lim, had received over *seven million* viewings of his five minute and twenty-second video (by January 2008 over 35 million viewings). Without a revenue model this young guitarist received zero compensation for his efforts, and only a modest opportunity to leverage his fifteen minutes of fame into better rewards.

Had there been an accessible, flexible revenue model, however, say a dime-per-view charge, Mr. Lim at 7,000,000 viewings would have earned more than $700,000 for his performance. Even if a music label had by some freakish miracle been able to deliver the same number of sales, the per-view charges would have needed to be ten times higher for Mr. Lim to

receive the same income. The label would keep 90% for administration and production, and consumers would pay a dollar instead of a dime.

The October 2006 purchase of YouTube by Google, Inc., represented another chink in the armor of distribution. Google's confidence in YouTube was bolstered by working agreements reached with several members of the RIAA for a revenue model that pays whenever a work is used, a sort of "on-the-fly-and-after-the-fact" licensing system. Unfortunately, there is little mention of using this model to pay the creators of the works. Once again, the corporations are cutting up the pie without cutting in the artists.

The latest salvo in the industry's fight to prevent individual distribution is the effort to pass legislation that would end net neutrality and award privileged broadband access to the highest paying customers. The intent of this kind of law is to create a tiered system that offers special distribution access for established industries and their VIP cronies. The goal is — as usual — to retain control of distribution within the corporations. Right where they want it, and right back where we started from.

The only solution for consumers and artists alike is a publicly available tracking and payment system that allows *any* individual to configure individualized use and payment terms for creative works. Helpful but not necessary would be legal access to the "on-the-fly" price model that YouTube is developing for the use of resampled materials. As well, individuals need full and equivalent access to online distribution without being slow-laned into oblivion by privileging broadband for corporations.

The music industry as we know it is currently working its way through the five stages of death and dying as developed by Elizabeth Kubler-Ross. First denial, then anger, followed by their current transition from anger into bargaining. Here's a heads up: the music industry will feel depressed for awhile, and finally accept their own death, then pass away. At that point we shall all gather together to bury them — online, of course — and then the rest of us can go on living, creating, giving to the community, and getting fairly paid.

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Station *"name to be chosen with the local population"* Multi-user Platform

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This paper describes a mixed reality participative game that uses the physical space with an embedded system and the virtual space of the Internet with a multi-user platform and a database. The game has a permanent character as a multi-user platform and a temporary one as an event. Its aims are to locate nineteen RFID identifiable tags encapsulated as letters that form the phrase *Mar Memorial Dinâmico* (Dynamic Memorial Sea) dispersed in a mangrove, to supply a database, and to map the mangrove area that will be chosen together with the local population and research institutes, where the embedded system will be implanted. The game aims at promoting environmental education, raising ecological awareness and showing the need to preserve the ecosystem. The participants are represented in the multi-user platform by avatars of the local fauna.

Supplying the database and mapping the area, the game aims to preserve the ecosystem by collecting data through the embedded system and through explorations in the physical site. Thus, the game will collaborate with educational actions directed to the community and with environmental programs for the mangrove. In addition, it enables network collaboration, knowledge construction through participation and exploration of the concrete environment in the physical area, and the organization of the data, making them available to the community. The game is open to teams of participants and occurs through the exploration of the physical site and the collection of information that will build the virtual environment. As an event, the game will go on until the floor plan of the multi-user platform in the Internet is satisfactorily filled with information, which will be collected by means of the exploration of the physical space and the location of the letters of the phrase *Mar Memorial Dinâmico* (Dynamic Memorial Sea), dispersed in the mangrove.

Station "name to be chosen with the local population" Multi-user Platform System development
The first stage of the project encompasses the modeling and development of the multi-user platform with the database, as well as the development and implantation of the embedded system. In the second stage, the game will be performed as an artistic event. The number of participants will be increased and the data collections will be enriched.

In the physical space, the embedded system will be implanted in the mangrove area. The embedded system comprises three microstations, which are the sensor points, and nineteen letters developed with ecologically appropriate material, which encapsulate the RFID identifiable tags. Two of the fixed points of the micro-stations will be implanted in the mangrove area that is adjacent to the sea, and a third one at the mouth of the river as it flows into the sea. The microstations remotely monitor levels of temperature, oxygen, pH, ammonia, and phosphorus in the reserve water, data that are valuable to the biologists who study the local ecosystem. They also monitor the movement of the identifiable tags that are the letters. The letters M, A, R, M, E, M, O, R, I, A, L, D, I, N, A, M, I, C, O are the encapsulated identifiable RFID tags. These will be spread on the ground and on the water of the rivers in the mangrove area.

In the physical space of the mangrove, the implanted embedded system facilitates the collection and the multimedia supply of the database. It also functions as an aid in spatial and geographical location and in mapping the area that contributes to the representation of the area corresponding to the physical space in the virtual floor plan.

In the virtual space, the multi-user platform is a floor plan of the environmental protection area of the mangrove. The platform as a virtual environment has a structure that allows distance real-time information exchange between the participants, establishing a dialog between the teams that act online and in the physical site. In addition, the teams can see the letters spread in the physical site on the ground and in the river, where they are located. Finally, the teams can consult the database supplied with texts, audios, videos and animations based on the collections carried out by the participants in the physical site and on Internet searches.

The floor plan in the multi-user platform will be gradually filled with the data collected both by the participants who are acting in the physical area and by the online participants. In the floor plan, niches of the local flora modeled in 3D, corresponding to the area in the physical space, will be made available when the sensor microstations show the passage of one of the letters. **The collections** are carried out in the **physical space** of the area by mobile technology with an interface to the sensor microstations, which form, together with the letters, the embedded system, or in home PCs; **and in the virtual space** of the platform in the Internet, by

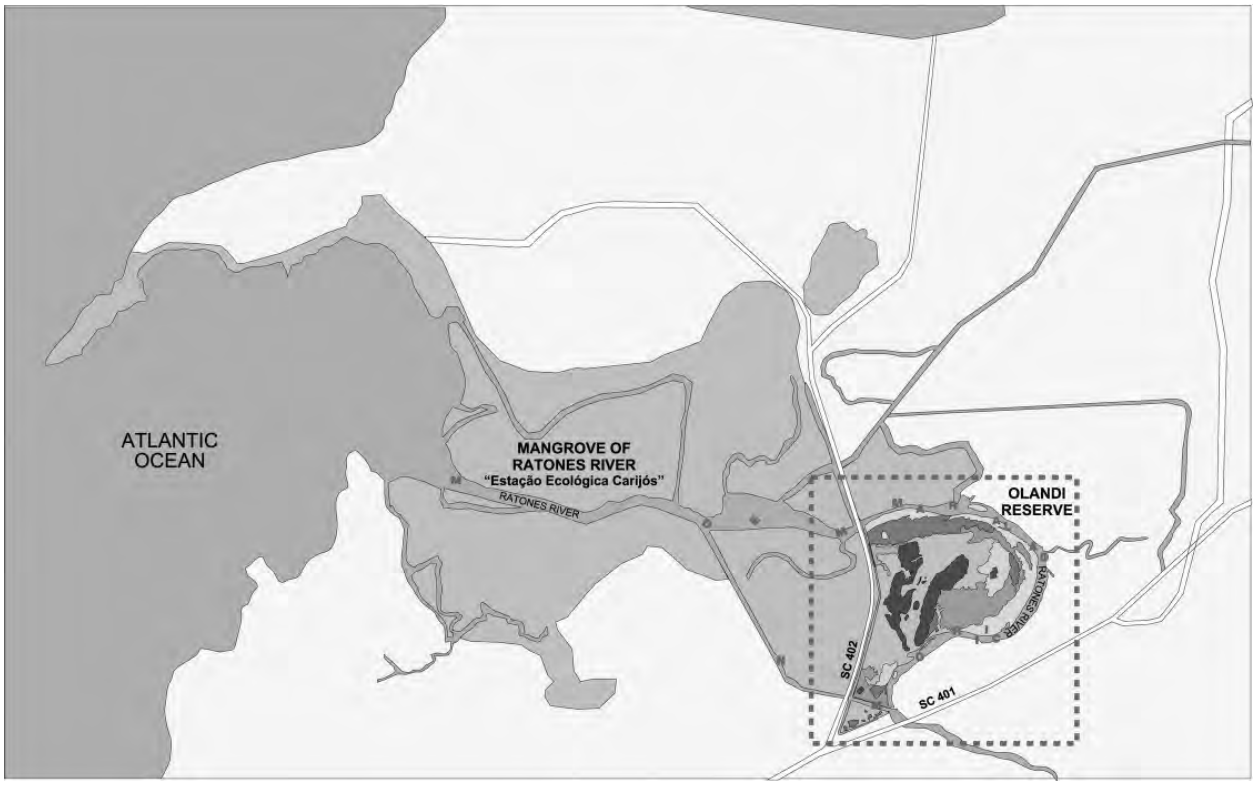

Figure: Map of a possible area of the Olandi Reserve in Florianópolis, state of Santa Catarina, Brazil, with the meander of the original bed of river Ratones.

search software. In the Internet floor plan, the collected materials corresponding to the letter **A**, for example, form one collection group. After the letter is located **in the physical space**, they occupy the area around it in the virtual platform. As the collections such as videos, sound captures, fixed images, textual data and icons representing the local flora are made available, after they have been previously modeled in 3D, together with the data about the movement of the letters in the physical area, the floor plan is gradually transformed into the virtual environment Station "name to be chosen with the local population" Multi-user Platform. The collected data are pasted to the floor plan as geotagging, gradually occupying the multi-user platform by means of participation.

The creation of the virtual environment happens as the collections are performed and the space is filled with the multimedia resources collected in the concrete space of the reserve. Thus, the game enables the immersion experience, intersecting both spaces: the physical site through the exploration of the mangrove and the virtual site of the Station "name to be chosen with the local population" Multi-user Platform. It establishes networks of interactions: human versus human, human versus animal, human versus environment, human versus technology, real and concrete versus virtual.

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From Digital Interface to Material Artifact

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In this short paper I will explore instances where the graphical user interface (GUI) has been referenced in the creation of three-dimensional physical artifacts. The selected works originate from a group of international artists who have repositioned the use of the computer GUI within the realm of creative practice. In addition, I will also step through an example of my own work, which references the GUI in the form of a mixed-reality installation. The works examined allow us to problematise our engagement with the digital in a technologised society, and raise questions around the experience of the GUI in terms of a personal and broader communal context.

Collective behaviours or intelligence often revolve around an object, tool or virtualising agent, which act as a catalyst to events and actions (Levy 1998). In this respect the shared object of the computer GUI can be seen to engender codes of behavior that control our navigation, communication and comprehension in the computer environment. The notion of object as both a material and virtual form, or a combination of both, sets up a theoretical framework in which we can consider the GUI in relation to mixed-reality constructs; where the idea of the artifact refers to both the tangible physicality of material objects and the virtual processes of digitally constructed environments. Both notions of artifact, physical and virtual, accrue value by our interactions with them, and necessitate a temporal, physical or cerebral engagement. As we consider the following artworks we should keep in mind the virtual, physical heritage of these artifacts which signal the potential for a fluid, conceptual and material interplay between spaces. Through these works the media specificity of the screen based interface is broken by dramatic changes in scale, location and context — desktop icons are disenfranchised from the usual participatory activities of the functional computer interface and the viewer is asked to reassess the meaning of the emancipated computer visuals.

Ron Burnett uses of the term ‘image ecologies’ in relation to the transformative potentials of digital media, a term that foregrounds the notion of multiple readings based on our intertwined individual communal and societal relationships (2004). Burnett recommends that images should be considered in the temporal, spatial context in which they are viewed. However, the located potential for multiple interpretations, through associated contexts weakens any original metaphoric meaning, and is particularly pertinent to examples wherein hybrid manifestations of the GUI cross over between computer and material formats. Burnett builds on the ideas of Bruno Latour who also supports the interpretative reading of images; raising questions around multiple encodings that can be built around any given image or symbol (2002). The transformative potential of the hybrid GUI shifts the reading of digital images ‘as purveyors of meaning to images as contingent spheres of influence’; interactive, and dependent on temporal and environmental or contextual affects (Burnett 2004: 59).

Artists working with three-dimensional form

A simple representation of the GUI in a material form can be seen in the work of Ola Pehrson, *Winfile.exe* (1997). *Winfile.exe* is a sculptural interpretation of a desktop file icon made of painted wood, 25 x 30 x 35cm in size. The piece looks like it should have been the original reference for the screen based file icon, and is an interesting example of a spatial representation of a digital metaphor (Pehrson 1999). In a further twist on the filing cabinet metaphor, the physical work can also be used as a real cabinet to hold computer information storage devices such as CD-ROMs.

Another artist to extract the desktop metaphor back into the physical world is the Croatian, Darko Fritz. Concerned with the notions of place and identity (rather than Pehrson’s digital spaces), Fritz plays with the sanitised meaning of the computer home icon in a series of works entitle the *Migrant Navigator* (2002). Remaking the image through a number of media outcomes, including billboards on the road to the Croatian border, and literally growing the home icon in a specially made

flowerbed, *The Future of Nostalgia* (2002). Fritz's work re-establishes a political reading and social context to the word and icon for 'home', purposefully confusing our computer-mediated experiences with physically impact-full interpretations of the symbol.

Jan Robert Leegte is an artist who exploits the differences in scale between computer screen and gallery environment. Extracting the scrollbar navigation device from the graphic user interface, Leegte projects these clean, rectilinear forms onto shaped-to-fit aluminum bars that create simple interlocking sculptures, and individual modular pieces, *scrollbar* (2002). The isolation and abstraction of the scrollbar navigation devices, removed from the virtual, and scaled up to a human size, float gracefully in the gallery space to reveal the modernist aesthetics of early graphical user interface design. The scrollbars become dysfunctional art objects as they are made to frame finite areas of physical space — an ironic state for a visual device that was designed to allow us to navigate through infinite virtual space.

Figure 1: *save_as* (2007), Ian Gwilt, augmented sculpture: acrylic, mobile video, AR software

The GUI as augmented reality installation

An example of my own practice: *save_as* (2007) uses an augmented GUI object and mobile telephone technologies to enable user interaction between a physical artefact and digital information (see Figure 1).

In the gallery space an upturned model of a partially open folder, a sculptural representation of typical folder icon that you would normally encounter on a computer desktop interface is seen suspended from the wall. *Save_as* uses mobile video facilities to place digital content in direct relation to the material artifact. The sculptural folder is overlaid with virtual texts that randomly link common software command texts such as 'save', 'cut', 'paste' and 'delete', with pronouns including 'him', 'her', 'them', etc. to create word combinations like "save me', 'cut him' and 'delete her'. These word combinations personalise and question our relationship with these everyday technologies and activities. The combined space of the interactive installation references the metaphor of the Desktop GUI as an agent of exchange between the real and virtual, where notions of reciprocity between audience members and computer systems are framed though an orientation around the computer interface both as an onscreen activity and concertised thorough the physical elements of the installations. The project is a collaboration in the use of ARToolkit developed by the HitlabNZ and the work serves as a model to demonstrate how a combination of AR digital content and physical objects can be used to engender cross media experiences and facilitate extended narratives and layered readings in a cultural or artist scenario. The installation also plays with the interplay and permeation of digital systems and visual metaphors of the GUI into physical environments and cultures, where the transformation from computer icon to material artifact sets up the potential for the works to be accepted as precious, rarefied artworks that command value and prestige (Rackham 2005).

In summary, the works outlined above demonstrate the possibilities of referencing the computer interface through a diversity of media types and media combinations, in a creative context. These artworks foreground to varying degrees, issues around shifting social cultural readings and spatial temporal contexts of the computer interface.

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Lost in Location

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"Innovations to make life easy" (TomTom) and "We'll take you there" (Garmin) — the corporate slogans of personal navigation companies promise to make the owner's life more comfortable with a GPS device (aka: SatNav). Nevertheless, stories on lost drivers continue to flood the media.[1] Users are repeatedly led astray or into accidents by their devices, and experts are commenting on the reasons while SatNav companies promise better devices, better algorithms, better interfaces and better maps. In the following, I will argue that neither algorithms, interfaces nor maps are to blame; rather it is the way that the devices situate users in locations that causes drivers to drive into lakes and find themselves stuck on narrow roads. By analyzing artworks that perform their location and thus aim to heighten the participant's awareness of the space s/he's in, I will argue that overcoming these SatNav strayings is first and foremost a matter of understanding how these mobile devices remove the user's location awareness.

Situating people

As de Certeau notes, the city can be accessed in two ways: from outside through the map or from within as a pedestrian. Concretely as well as metaphorically, these two views represent different ways of understanding a location: the structurally abstract place or the socially and historically embedded space. The relationship between the map and the street was challenged by the situationists with their dérives and subjective maps: *The Naked City* by artists Jorn and Debord visualizes Paris as space; walks in Paris' neighborhoods resulted in a psychogeographical map depicting the pedestrian's experience of the city.

Like the situationists, I am interested in the continuum between place and space; in the frictions between street level and map. SatNavs appears to remove the inconveniences of the map by creating street-level routes instead of overview maps but there is something wrong with the way it conceptualizes the street level and situates people. Manovich argues that the city is becoming an augmented space containing various 'invisible' information layers; I am further arguing that — while at the location — badly designed mobile artifacts get people lost when they navigate this augmented space because the city becomes abstracted (cf. Lefebvre and also Flanagan), whereas well-designed artifacts situate people in the locational context.

To (be) situate(d)

Where a SatNav aims at eliminating the abstraction of the map, several artworks suggest other poetics of space by challenging the map-view. Through exploring the place-space continuum and explicitly investigating strategies for situating the participant, the four cases below create different frictions between map and street.

At the space-end of the continuum are Janet Cardiff's audio walks. Played on a mobile audio device, walks are site-specific artworks giving directions layered on a background of recorded but site-specific sounds plus a narrative element related to the sites experienced en route. Participants are situated in the location because Cardiff's narration highlights location properties through the poetically constructed directions while they blend with real-life sounds present during the walk. The experience of the location is thus tied to Cardiff's narrative interpretation of the location and by following in Cardiff's footsteps the participant is sensing the location's space.

Participants in Blast Theory's performance *Rider Spoke* interactively investigate the city by bike with a location aware mobile device. Participants roam the city's streets looking for locations to record short messages or search for messages recorded by others. As opposed to Cardiff's audio walks, *Rider Spoke* does not have a fixed route or narrative; participants are left to experience the city by themselves in a contemporary Situationist dérive where the acts of recording and listening to messages lead the way. The experience of the city is tied to being on constant lookout for both cars and suitable spots which inflicts some degree of investigative situatedness. However, as Flanagan argues is the case with Blast Theory's earlier works, *Rider Spoke* is not a situating performance in Lefebvrian terms. Thus, *Rider Spoke*

is *not* a dérive but still becomes site-specific during the course of the performance because of the recorded messages. *Rider Spoke*'s poetics of space is thus concerned with investigating the frictions themselves.

Lastly, in Nokia's N-Gage game platform gamers play against other N-gamers either close-by through Bluetooth or remotely through GSM. In the N-Gage commercials, empty city landscapes suddenly come to life when a lone person starts playing, thus implying that the city in itself has no life apart from the augmented space accessed anywhere and independently of location via the mobile phone. To Nokia, the city has no social space until the N-Gage is put into play.

Although the cases presented above represent three different points along the place-space continuum, they all express a poetics concerned with representing how the city thwarts augmented space and the resulting frictions.

Being location aware

Unlike N-Gage's location aware but location independent setup, the very analog *Lost-Found Series* by Meredith Warner amplifies a site's characteristics as she unravels and re-knits lost, knitted objects to the place she found them. The reknitting does not create a location aware object, but it can serve as an image of what a SatNav does not do: situate the user. By integrating the found objects into the surroundings and pointing out the site's space-ness by means of the alien object, the steady artist's hand becomes the intermediary between alien and location in the same way that Cardiff is the intermediary between participant and location. Even though there are many differences, both artists point to overlooked aspects of the location and by perceiving these aspects, participants become location aware.

Contrary to the stray users of SatNavs, both audio walk participants and spectators of *Lost-Found* quite simply experience the location they're at instead of just walking through. The same goes for *Rider Spoke*'s cyclists and to a lesser degree also the N-Gage users as both articulate the invisible properties of the place — that is the space-ness of the place. The SatNav aims at doing the opposite as the map is understood as an inconvenience to be eliminated. The SatNav tries to transform map into street view but in reality the location specificity disappears from the user's perception. Unknowingly, s/he understands locations from the map's perspective while under the impression that s/he is navigating the street view. In continuation of the Situationists, the SatNav designs an experience of the location traversed so abstract and permeated by the authoritarian logic of the map that the user is unable to subjectively experience the space. The different strategies for situating participants presented above prove that location aware technology alone does not make a location aware user. Applying these strategies to SatNavs would allow for subjective experiences of locations; drivers would be location aware instead of lost in location.

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"Moving into the Stillness of a Daydream"[1]

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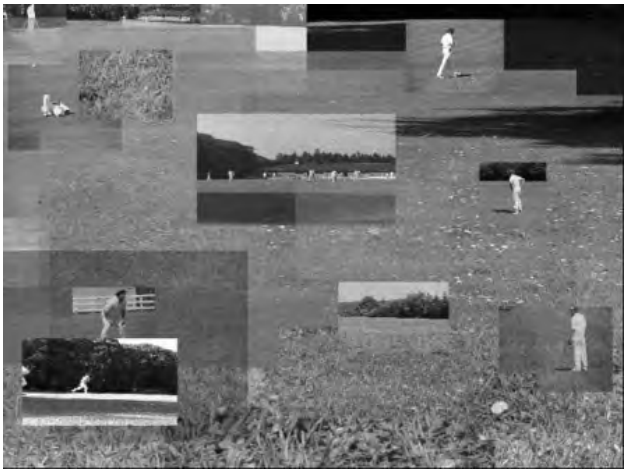
My practice generally concerns the use of computer technology to augment our thinking and elucidate deeper understandings of issues and situations. In particular I am interested in the parallels of facilitation for critical thinking which are evident in hypermedia research and Conceptual Art where both concern the semantic association of thoughts and idea networked into one overarching concept. Semantic networks, interlinked database items and the Indexes of Art & Language are different outcomes of the same process. The digital paintings presented here are pictorial representations of the semantic networks of social sports played in their particularly dedicated environs giving a spectator's overview of each event. They constitute a triptych of non-linear films, "Blue"Green:White", about social sporting activities, cricket, swimming, cross-country ski-ing, which represent the leisure time of a small community in rural N.E. Scotland without access to a cinema or theatre.

As a spectator, there are moments of concentrated focus on the event, on the action, and lapses of interest where the eye meanders around the scenery — daydreaming ensues until brought back to the action. The films exist as faithful memories of events where leisure and daydreaming are encouraged as legitimate forms of time out and therefore allow us a "disappearance" (Virilio 1991) from the everyday. They are part of a series of Digital Action Paintings comprised of looped films, which remain more painting than film in that they are each seen all-at-once and projected at painting scale in painting positions. Each film is a collation of over-lapping still environmental images incorporating two QT movies of human action, all of various transparency levels combined into one piece. The collage effect is enabled by new lens technologies and combinatorial software for the interweaving of moving and still images. The work therefore bridges new media and traditional practice in that they are digital but address the conventional values apparent within flat surface picture making designed to move the eye around the canvas.

According to Nicolas Bourriaud "The Aura of contemporary art is a free association" (Bourriaud 2002), he is referring here to Relational Aesthetics and so makes a case for social engagement within an art practice. This free association is a wider contextualisation outside the gallery spaces and into the everyday. The free association can also be taken as an extension of the semantic networked artwork continued out into the daily lives of its viewers. Thus delivering an escape route within their free time space. The triptych of digital paintings presents a spectator's view of passing time pleasantly, at their leisure; they daydream and wander visually around a scene. They interconnect a game with a landscape, each to its specific environment. They interlink the human actions within the still surroundings to give one understanding of an event. The films then, give a holistic experience of watching a sport on a day out of work; they infer the daydreaming that took place there. The film watcher can further engage in this disappearance from the everyday in a free-association with the work, by daydreaming themselves whilst viewing.

Within this project ideas of daydreaming have arisen with regard to Paul Virilio's work on inertia and picnolepsy. The need for daydreaming as essential to our everyday existence is understood from the ideas of Theodor Adorno on leisure and free time. Daydreaming is a non-linear activity of free-association and so can be readily represented digitally; it is the hypermedial device holding the multimedia items together by semantic association within the digital paintings.

Virilio's argument for the acceleration of modern life, the immediacy of information and an understanding of distance as time, led him to the statement "Now everything arrives without any need to depart" — "Polar inertia" (Virilio 2000). Virilio observes that the arrival of dynamic vehicles carrying people or information such as the car, has been replaced by the arrival of multimedia items into static vehicles. Telecommunications have brought in the era of "staying on the spot" or "housebound inertia" (Virilio 2000). This is reflected in car design where speed is a selling point even when over the lawful limit. Within racing car



Green

White

performance the ultimate extreme, according to Virilio (Virilio 2000), is to make the starting and finishing line coincide, and this can be paralleled with the idea of teleportation into the architecture of the intelligent home. It is this understanding of "movement without moving" (Virilio 2000) facilitated by new technologies within our ordinary everyday life, which has informed the making of Blue:Green:White.

Corporate globalisation rather than art or philosophy determines our culture and lifestyle and also directs our everyday life by designing our work patterns and allotted free time. Adorno's pessimistic predictions on the culture industry's goal of homogeneity (Adorno 1991) still play out today and in particular with regard to the phenomena of free time or life outside work, our work-less time. His critique addresses the work ethics of wage labour with its distinct work and free time, and highlights the dilemma within "And yet, in secret as it were, the contraband of modes of behaviour proper to the domain of work, which will not let people out of its power, is being smuggled into the realm of free time." (Adorno 1991) He focuses on the inanity of leisure activities and in particular the hobby supplied by the leisure industry for profit while keeping people as amateurs. If labour power has become a commodity then the expression hobby amounts to a paradox where "Organized freedom is compulsory." (Adorno 1991)

We are given time for leisure and relaxation in order to work more effectively afterwards, without distraction or the need to lark about, but we are then provided with activities to prevent total inaction which would lead to boredom and objective desperation. Those activities are never too demanding i.e. Sunday cricket, or they would become work, can be essentially passive i.e. watching T.V., or quasi-active i.e. recent spectator sports which, according to Henri Lefebvre, (Lefebvre 1991) allows the supporter to attend, participate and play sport via an intermediary. Lefebvre sees leisure and work as the interlocked elements of everyday life and insists that we cannot step beyond or escape the everyday in its entirety "the marvellous can only exist in fiction and the illusions people share…And yet we wish to have the illusion of escape as near to hand as possible." (Lefebvre 1991) Employing daydreaming as a private method of escape from work is commonplace. Extending this through art facilitating the deep contemplation of the daydream experience offers a means of disappearance from our allotted leisure time and in so doing may offer us true stolen episodes from the chaos of contemporary life. Watch the film and drift away in a holistic understanding of the event.

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1 Research into the 'daydream' as a convivial meeting place for art to happen is currently underway within a long term collaboration with fellow artist and researcher Dr Barbara Rauch, Chelsea College of Art & Design, London.

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“Japanesque Modern” in Media Design Education

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Preface

In this global society, how can we apply the Japanese traditional way of thinking and manners to our new technology or digital content? The Japanesque Modern Project (*Shin-Nihon-Youshiki*) began in 2006, promoted by the Ministry of Economy, Trade and Industry of Japan. The purpose of this project is to seek the distinctive national brand of products, contents and services originating in Japanese culture to make strides in the international market. This project has four aspects as follows.

1) The Committee Japanesque Modern was established as a think tank of the community. It consisted of more than 100 organizational and individual members.
2) A certification “J-mark” was launched to select symbolic products, services, and content that reflect the concept of Japanesque Modern.
3) The “J-mark” collections were exhibited in the central business area of Tokyo.
4) Some academic institutions offered educational programs related to “The Japanesque Modern” to spread the concept and foster future projects by young designers.

Learning from the Japanesque Modern Collection

The “J-mark” collections are regarded as fitting our modern life by integrating traditional craftsmanship, hospitality and aesthetics, and new technologies of Japan. So far, 116 products and services have been marked as acceptable. When we started the special course called “Introduction to the Japanesque Modern,” the committee and I arranged to invite some guest lecturers, including jury members, J-mark holders, potential receivers and researchers of Japanese traditional media technology. J-mark collections were defined for students through a series of lectures.

For example, Mr. Okinaka of Suntory Ltd., a beverage maker, told us how they had established the brand image of their bottled Japanese tea “*Iemon-cha*” by collaborating with a traditional green tea maker, introducing bottling technologies, and creating package design. Their TV commercial mainly targets middle-aged businessmen, portraying a green tea craftsman and his obedient wife to foster a sense of nostalgia for the “good old days”.

Mamoru Hosoda, animation director of *The Girl Who Leapt Through Time*, introduced the original story that was written 40 years ago and interpreted several times by different directors. However, remaking the film revealed a difference in the time periods. He changed the high school girl heroine, thereby reflecting the audience’s preference for a contemporary Japan. He also discussed how he collaborated with Takashi Murakami to create “*Superflat Monogram*”, a short movie for Louis Vuitton.

We can also understand that recent innovative humanoid robots, such as HONDA’s *Asimo*, are rooted in the history of Japanese mechanical dolls of the Edo period (17th–19th centuries). Asimo’s gestures and features represent a quest for a human-friendly robotic culture influenced by Japanese anime and science fiction.

Another sample, “*The House of Light*”, incorporates American artist James Turrell’s concept, domestic technology, and the traditional usage of light in Japanese houses. When Turrell was commissioned by the Echigo-Tsumari Art Triennial in Nigata Prefecture, he took the concept of a guesthouse for meditation from “*In Praise of Shadows*”, a well-known aesthetic essay by Japanese novelist Junichiro Tanizaki.

The following table shows a basic description of the lesson.

Table 1: Overview of the Lesson Plan

Subject	Introduction to the Japanesque Modern
Target	87 students (freshman and sophomore levels)
Time period	From April 26, 2007 to August 2, 2007 (90 min. by 14 times)
Institution	Department of Digital Communication, Digital Hollywood University, Tokyo, Japan
Topics and speakers	• Part 1 — Introduction to the concept of Japanesque Modern. Hirotsugu Kashiba, Secretary-General, Council members — Japanesque Modern, Tomoyuki Sugiyama, jury of J-mark collection, principal of the university, Yutaka Hikosaka, jury of J-mark collection, architect/environmental designer. • Part 2 — Getting to know the tradition of the Japanese media. Machiko Kusahara, Waseda University — "Utsushi-e" shadow theatre, Nobuhiro Yamaguchi, Origata Design Institute — Origata/paper holding. • Part 3 — Case studies of media design. Sadahiko Hirose, Columbia Music Entertainment — Kyoto Movie Studios Project, Naoto Okinaka, Suntory — Japanesque branding of bottled green tea, Kimitaka Kato and Tomotaka, Suzuki, Fujitsu — Universal web design, Daishiiro Aramaki, Takahiro Inoue, Shochiku — Kabuki Cinema, Kentaro Kawashima, Bandai Namco Games — producing games for a global market, Mamoru Hosoda, animation director — "*The Girl Who Leapt Through Time*". • Part 4 — Assignment — editing a visual report or making a freestyle project plan. • Part 5 — Student presentations.

Figure 1

Figure 2

After the series of lectures, the students had to submit and make a presentation on either their visual report or a freestyle project plan of digital content reflecting Japanesque Modern. The "visual report" included a summary of the lectures with illustrations or collages related to the theme (Figure 1). I asked some of the students to take photos of the classroom (Figure 2). The photos and links, along with my comments, were uploaded on our closed website so that the students could download them. One student presented a plan for the exhibition of J-mark collections in the online 3D virtual world "*The Second Life*", and another did a promotion plan for a movie that featured 3D avatars of traditional dancers.

Conclusion

Though most of the students have had little experience with traditional Japanese entertainment culture, they seemed to be interested and had many ideas for their new media creations. Here are some of their comments:

> I was moved to find that many companies make an effort to learn the good points of traditional Japan and take advantage of them. I was also happy to learn and discover traditional culture.

> I have heard "to preserve tradition" frequently, but "to make the best use of tradition", like Japanesque Modern, was a new concept to me. It may be the result of the Japanese people's change of consciousness from modest to active in an effort to promote their own culture in the age of globalization.

Since this course was an experimental one-year program for the freshman/sophomore level, the results will show at a later stage. Yet, some of the students I taught at the senior and graduate level have been trying to create contemporary Japanesque images in the form of digital illustration or animation.

As Takahata and other researchers point out, the style of Japanese anime can be traced back to storytelling using old picture scrolls or theatre arts. Those stories and expressions developed through the repetition of editing and reformation of former ones. The traditional stories or images were thought to be public domain, or collective intellectual/artistic property, and conventional art education was based on following them.

The game maker and J-mark holder, Nintendo, was established in 1889 as a maker of card games. Japanese card games originated from the Portuguese "*Carta*" (tramp cards), and were localized by mixing Japanesque graphic patterns and rules. In other words, this "software" has developed over a period long enough to make it look totally different. For people like us in non-Western countries, the industrialization of the 19th century was equal to Westernization. Therefore, we feel a distance between domestic traditional culture and modern technologies. However, the reality was a hybrid culture of Western methods and domestic thinking. Now, we know we cannot dismiss the value of traditions as a rich resource for contemporary media design.

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Artistsinlabs: Reality Jamming between Lucid Fields of Practice

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This presentation will begin with an outline of technical progress and our information society in so-called "developing" countries and construct a set of relevant questions on the future of art and science collaborations. These questions focus on the role of the artist in relation to the business of scientific knowledge. Is empirical knowledge only situated in a specific time or place or can it co-exist simultaneously in two parallel lucid fields of practice: media art and the visual sciences? In this light,"*Lucid Fields*" are comprehensible and factual fields of reality and paradox that exist today rather than the fictional illusions of tomorrow. The authors claim that the potentials of cogent and coherent communication are increased when media art is mixed with scientific research, particularly if the aim is to make critical scientific issues more articulate and transparent to the general public. The authors will arrive in Singapore early and cull information from interviews with Asian media artists (some who are working in science departments at the National University of Singapore) and prior interviews with Swiss media artists who are working in science labs. The results will compare the role of an artist as *a critical enquirer within the scientific field* to that of an artist as *a valuable outsider from the field of new media*. The interviews with Swiss artists are related to an accompanying exhibition held at the same time as ISEA, about Artificial Intelligence, physics and relativity, environmental science and biotechnology. A set of critical issues are addressed in the questionnaire on the relation between utopic and dystopic interpretations of humans and their machines; the visual/acoustic augmentation of real space as factual information, genetic engineering and the paradox between energy and progress. Through this methodology the authors hope to shed light on the different roles of media artists in relation to situated knowledge and cultural difference, and whether this information-reality is evenly shared across artistic and scientific fields of practice.

Notes about the accompanying exhibition

All the main artworks in *Lucid Fields* are directly related to one of the main themes of the International Symposium on Electronic Art entitled "Reality Jam". The artists are operating in a grey zone inspired by an immersion experience in a scientific research laboratory and they utilize the mediums of performance, installation or sound contexts as interpretative mirrors to myth and scientific fact. In some instances, seamless media transitions are used to blur the relation between science and art, while in other works, the differences are more evident.

In the movements of *Kubic's Cube*, a robot by Pablo Ventura, the viewer can witness a particular "bottom up" approach to Artificial Intelligence research that attempts to rebuild our behavioral attributes and movements in order to understand how the body shapes the way we think. Here, a robot celebrates machine/human cohesion by attempting to move like a dancer, as if in pure bio form, confronting the viewer with the question: do you wish to condone this level of machine human integration or resist it? Ventura is still working with scientific researchers from the Artificial Intelligence Lab at the University of Zurich, who are currently building an accompanying humanoid or dancing robot, which he can choreograph and add to his company for future dance performances. Photos of new robots in progress also appear in the exhibition, and together, the robot installation and the photographs explore the potential of machines becoming more expressive extensions of the organic human body, and playing a wider role in our virtual and real urban spaces of the future.

Similarly, in the performances and installations of Pe Lang and Zimoun's work cannily entitled: "Untitled Sound Objects", physical materials generate sound through vibrations, which are directly generated by computer-controlled machines and robots. Here the lucid grey field is shrouded in the desire to create an acoustic architecture with an organic feel. In 2007, Pe Lang was an artist-in-residence at CSEM (The Swiss Centre for Microelectronics) where he continued to investigate the properties of sound, materials including their resonance and their generative system potentials. The duo believe that technology is only a tool for converting the idea of complex systems into simple and immediate experiences for the viewer, and the software (Max MSP) helps to make this translation possible. In another case, this software takes in acoustic data in real time and "sonifies" it, then replays it as an altered acoustic reality by controlling the movements of a lone speaker on a stand. When this speaker shows human-like response to the sound it is being fed, the viewer is unsure about the source of its stimuli and wonder about the effects on it.

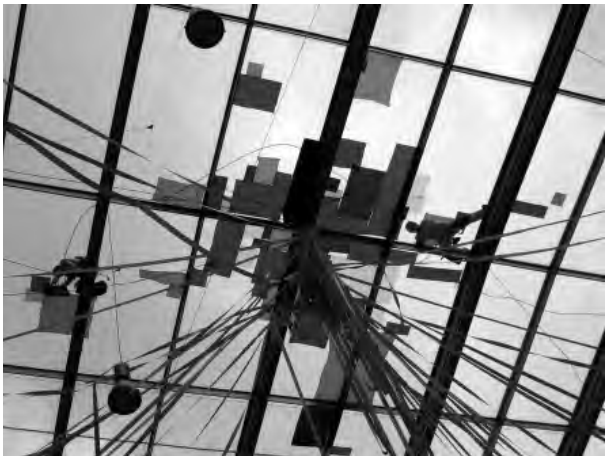
Another metaphor for control and public movement comes from the combined fields of engineering and architecture. Media architect Monika Codourey is interested in the transitional reality of airports and the surveillance technologies used to control the public flow through them. She calls these "manufactured thresholds" in our so-called "free market economy". Her project ("Airport Transit Condition") is currently being extended by a residency at the Institute for Psychology (University of Basel), where she will construct a reality game based on how constant travellers are psychologically affected by their own flow of migration through transportation hubs. She highlights surveillance as the controlling mechanism for a clear division of society, as well as a place where new isolated urban cities are being created. Airports are grey zones or abstract spaces of landsides, airsides and extraterritorial divisions where compressors of time and space can occur. She currently studies created by a bureaucratic system of inclusion and exclusion within trans-nation states rather than transitional spaces. Transit zones at airports emerge because of a complex set of factors: the problems of border crossing as well as increasing levels of security and safety regulations. The innumerable thresholds to the transit zones are points of congestion that are governed by an imperfect system of identification, however, a lucid collapse of time and space are often evident.

As an illustrative counterpoint to this work, another interactive installation by Dominik Bastianello ("Where in the world am I") shows the first and most accurate real-time video interpretation of Einstein's theory of relativity. Many physicists from the Paul Scherrer Institute, where Bastianello had an artists-in-residence award, were astounded that this theory could be represented through the medium of real-time media. In this instance the viewer can manipulate a cultural icon on an inner-circle and simultaneously a live camera on the outer circle to create an actual "reality jam" of time and motion. As the viewer manipulates and combines the speeds of two spinning circles, the lucid zone is actually visualized and time and space stand still! A pioneering moment in physics is re-interpreted.

Another related artwork to the wonder-world of pioneering physics can be seen in a project that Roman Keller (an energy-activist) has developed at the very same physics lab (PSI) for his residency project entitled "The Rocket for the rest of us". Keller's wish was to highlight the slippery pioneering spirit of the sciences by actually digging around in the archives of PSI and fishing out historical facts about rocket fuel. The results of this endeavor are displayed in a book in the exhibition, whose last pages include an actual physical documentation of his own construction entitled "The Reinstallation of a Solar Power Rocket Laboratory". In doing so he wished to win the hearts of both the physicists and the public based upon the yearnings and dreams many share about space exploration although they acknowledge that it consumes huge amounts of energy. Finally, Keller actually managed to excite the scientists by taping into these emotional reactions and entice them to collaborate with their engineering methods and skills. The resultant rocket is on display in the exhibition: a product of how the grey zone between art and science can capture the public's imagination and also make a comment on alternative energy for the future.

This type of lucid reality can also be found in the eco-activist works of performance artists Hina Strüver and Matthias Wüthrich. These artists have been engaged in risk assessment research on the applications of Genetically Modified Organisms in the Institute for Integrative Biology at the Swiss ETH Federal University. By performing, climbing and building various sets of metaphorical GM trees in site-specific environments like Brazil, Zurich and Vietnam, they wish to deliberately bring local attention to the issue of GM

A rocket for the rest of us — solar rocket at the Paul Scherrer Institute, PSI, Villigen by Roman Keller



Regrowing Eden — Performative Sculpture at the Institute for Integrative Biology, ETH Zurich
by Hina Strüver and Matthias Wüthrich

agriculture. These performances which evolve in "real" environments are enhanced by an active interactive website, which directly confronts the issue of public reaction and debate. This website (www.regrowingeden.ch) not only allows participants to virtually simulate genetically modified plant growth, but also to answer questionnaires and discover where the artists have been performing and where their next performance will take place. The mythological connotations of the title "Regrowing Eden" also offer a specific authority for the viewer-interaction as he or she is able to modify new plants online as well as compare the polarity of public opinion on the direct effect of biotechnology on the future of agriculture.

The raising of public awareness about genetics and mutation is addressed in a different way in the work of Jill Scott. Based on her residency in Neurobiology at the Institute of Zoology, University of Zurich, Scott gained a deeper insight into the genetic control of visual system development and function by analyzing zebra fish mutants, which are used as the main phenotypes for all human eye disease research. The documentation in the *Lucid Fields* exhibition physically combines the controversial implications of behavior and genetics with interpretative results from her direct collaboration with the scientific researchers. Here the "reality jam" is between artistic interpretation and the direct display of the factual evidence from the researchers themselves such as histology, behavioral tests, molecular staining, cellular images and related keywords. The result was an interactive neuro-media sculpture, which combines examples from actual genetic research with more abstract interpretations. A grey zone is produced where projected films (interpreted affect) are directly related to the content of the ocular films (scientific evidence) but the aim is still to allow the general public to gain a better understanding of how vision is affected by genetic deficiency.

By showcasing various other examples from our artist-in-lab program history in the exhibition, specifically in the form of DVD documentaries, the viewers may also gain more insight into the *lucid fields* that other resident artists have also crossed. These films, which document another 11 other artists resident in 9 labs from 2004, were made with sociologists and they focus on the collapse of scientific context and cultural exposure in the grey zone we also call *Lucid Fields*.

On another realm, the potential of showing *Lucid Fields* in Singapore may also bring to light some similarities between Switzerland and Singapore. This likeness is not only about the fact that both countries exist as islands within clean, hygienic and strictly organized zones, where a mix of a few cultural nationalities co-exist, but that these countries also share similar agendas for a future where trans-disciplinary grey zones could be encouraged to develop between scientific research and cultural education in the future.

On the Embodiment of the Virtual:
In the Age of the Collapsing Distinction Between Fiction and Reality

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This paper does not propose new technologies, but focuses on the avatar as a medium of embodiment. It is about an altered perspective on the concept of the avatar in virtual online worlds (MMORPG).

At least since the dawn of modernity during Renaissance, reality has been defined as a stable supra-personal fact beyond subjective perception since subjectivity distorts factual reality due to personal inclinations and idiosyncrasies. Reality has to be verifiable by measurements and is thus true for each person. The antinomy of reality is fiction, being something made up either by intentional active fantasies (novels, theatre plays, and motion pictures) or (supposedly) unintentional and sometimes pathological imaginations. Also virtual realities are inscribed into this epistemological divide being a part of fiction. The avatar has therefore long been compared to the mimetic representation of the theatrical role. Because the avatar in no way has to correspond to the user's 'reality', neither physiologically nor psychologically, it is seen as a representation of a fictitious figure (dwarfs, elves, etc.). The player is thus enacting (role-playing) the avatar. Paradoxically, the avatar is at the same time seen as a representation of the player in the virtual world.

Figure 1: Avatar Shreya, World of Warcraft

Theatre plays (and motion pictures) are artistic expressions that are presented to an audience. They have to communicate their very fictitiousness. Artificial online worlds, on the contrary, are made for players and users who want to communicate and (inter-)act with each other. Hence we have to look at the ontology of the avatar from the perspective of performativity. I want to claim that the very concept of the avatar in virtual worlds evades the Western notion of pictorial, mimetic representation by being profoundly performative and participatory. Hence avatars create affective and communicative bridges between the material realm of the player and the virtual worlds of his/her avatar. This change is supported by technological research trying to construct very concrete palpable feedback mechanisms that activate the majority of our senses (e.g. tactile feedback, biosensor systems, etc.).

In order to explain this decisive difference between mimetic and performative representation, I will revisit the concept of the Byzantine icon. The Byzantine icon is a ceremonial and performative part of the liturgy. It is simultaneously "a scenic representation and presentation" (Bek 2003). This duplicity is at the core of the eastern iconology since it contains two functions at the same time: it is both a visual representation (of the depicted saint) and a concrete materialization (of eternal forces). Liturgical veneration as "dramatic enactment" (Bek 2003) reveals and, more important, operationalizes a "likeness in essence" between the depicted (presentation) and the depiction (representation), making it an energetic transmitter for the believer more than a reflection in a Platonic sense. In orthodox '*weltanschauung*' "man must always relate to the spiritual *through* the physical" (Auxentios 1987). This 'physical spirituality' gives way for "that [the icon] constitutes a *real* image of that which it depicts. The image is in some way a 'true' form of the prototype, participating in it and integrally bound to it" (Auxentios 1987). A prototype is the energetic essence of

Figure 2: Christ and Saint Mina, Bawit, Egypt, 6th Century

the depicted, and the icon the material medium for it, or as H. Belting expresses it: "The difference between the image and what is represented seemed to be abolished in [the icons]; the image *was* the person it represented, at least that person's active, miracle-working presence, […]." (Belting 1994)

Despite the undeniable differences between more profane MMORPG and religious iconology, between spiritual realms and virtual reality, there are striking similarities, which help in identify and describe the ongoing collapse between the mentioned divide of reality and fiction/virtuality. Like the icon, the avatar is a pictorial representation of the player and simultaneously an iconic presentation of the player's communications and actions in the virtual world. The avatar is to be understood as a performative 'prototype' that allows for interpersonal communication in virtual realms. This expands the semiotic aspects of the avatar by constructing a direct affective and emotional bond between the player and his/her avatar. That is why we can experiment with our personal and social behaviors and our identities in more than a symbolic way, and that is why occurrences in virtual online worlds can cause bodily effects (e.g. Turkle 1995, Taylor 2006).

Virtual online worlds "re-mediate" (Bolter; Grusin 1999) theatrical phenomena (like role, narrative themes, dramatic conflict, etc.) in order to create a sensory — yet virtual — platform for (inter-)actions.[1] In the re-mediation process, the avatar is transformed to be the player's performative prolongation, and the avatar's features (e.g. appearance, abilities, and status) are communicative attributions to the player rather than psychological aspects of the representation of a fictive figure. The avatar is not "an instrument of supernatural power" (Belting 1994) as the cultic icon, but an instrument and medium of bodily expressions and intentions in the intangible worlds of MMORPG. That is why the analogy between the theatrical actor/figure-relation and the player/avatar-relation is not sufficient. (Still, dramaturgical knowledge and capabilities are essential for the design of online worlds and avatars.)

Most online worlds/games offer rather limited choices for what concerns modulation of the avatar's appearance (race, gender, etc.), its bodily and facial expressions, and its concrete actions (drinking, walking, flying, fighting, etc.). From a technological point of view, these are limitations. Yet these limitations disclose schemes (prototypes) that support the reduction of complexity necessary for the preservation of the game play and simplification of communication, similar to the Byzantine icon, which "was a scheme that could be filled with new life, for the intention was not to preserve an earthly form but to communicate the archetype that alone justified the cult of images itself." (Belting 1994) Avatars are prototypes that sustain (phenomenological) reductions and yield efficacy in action (e.g. quest) and communication.

The avatars in World of Warcraft are divided into precisely defined races and classes with specific abilities and tasks. This is depicted by the avatars'

visual appearance. Avatars in Second Life are more personalized, but they do follow and construct communicational schemes, depending upon what the player wants to pursue and which reaction she/he wants to elicit. Players will communicate differently with an anthropomorphized cat with sunglasses than with a blond woman with tight leader robe and high heeled boots. Blast Theory's urban gaming project *Can you see me now* (2001) constructs two different avatar-player relationships: a common one, where the player in front of a screen controls his/her avatar's whereabouts in a simulation of an urban district, and a reversed one, where physical players, chasing virtual players in the very same but real district, are depicted on screen by means of avatars. In Byzantine iconology, "the icon touches on the reality of God" (Auxentios 1987). In Blast Theory's piece, the icon palpably touches the individual player, conflating reality and fiction.

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1 For a thorough review of the re-mediation process and its significance, see Heinrich 2008.

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The Sonic Commons: An Embrace or Retreat?

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Privatisation

Contemporary western culture takes such notions as the private and the intimate very seriously, regarding them as both fundamental and natural rights. So closely linked are they to the basis of industrial capital that it is easy to overlook the historical reality, where private space, as opposed to the public vis-à-vis, is a relatively recent luxury commodity!

In the audio realm, the communication technologies of the telephone and wireless broadcast have created and proliferated the possibility of *intimate listening spaces* within the public domain. Recent developments in mobile audio devices such as the cell phone and personal listening systems have amplified the transformation of the sonic commons, punctuating it with myriad imploded private soundscapes.

Such immersion in the self, such selective listening, is a retreat from public and shared aural forms towards an individualised and commodified form of aural experience. This movement strongly parallels the recent embrace of political and economic tendencies that shun the collective and communal but valorise the individual and the privatised. The concept of aural privacy, once inextricably linked with either spatial isolation (a conversation in camera) or with furtive behaviour (whispering), now strikes us as remarkable. The *internalisation* of sonic narratives has an interesting precedent in the discovery of silent reading; for we forget that before the 5th century the literate were also *performers* of written texts. The first known citation of silent reading was recorded by St Augustine in reference to a 5th century monk, Ambrose.

> "When he read his eyes scanned the page and his heart sought out the meaning, but his voice was silent and his tongue was still. Anyone could approach him freely and guests were not commonly announced, so that often, when we came to visit him, we found him reading like this in silence, for he never read aloud."[1]

To gauge the significance of this shift in behaviour, imagine a London Tube at peak hour with the entire carriage intoning articles from *The Times* and *The Telegraph*!

Telephony; locatedness and public speech

Whilst it is common knowledge that technological forms of sound reproduction have had a dramatic effect on the manner in which we experience sound in the public realm, we are less aware of the underlying transformations in relation to the spatial location, temporal displacement and the virtual elimination of provenance that mark recorded and transmitted audio.

Murray Schaefer's[2] *Schitzophonic* splitting of a sound from its original source en-route to being embalmed in a recorded or transmitted medium is at the very heart of both the temporal and spatial dislocations with which we are now so familiar. Schitzophonic audio therefore runs counter to the powerful and fundamental psychoacoustic linkages between the eye and the ear, forming the perceptual glue that instantly identifies a sound with its source and location. This disassociation of sound and source is enshrined in the history of Electroacoustic music as Acousmatiques.[3]

The original fixed landline (point to point) telephone represents one of our earliest experiences of schitzophonic audio. Even so, the early telephone system marked the geo-spatial location of those in dialogue to the point that each correspondent associated the signal with both a personality and a physical surrounding and therefore to some extent, the telephonic act became a sonic bridge between familiar sites. At each end of the line, an imagination of the distant site, a parlour with overstuffed chairs and a mother's dress, a formal wood panelled office and the smell of pipe tobacco and so on.

Thus, the landline partially diminished the spatial otherness implied by communication at a distance by frequently reinstating a supplementary knowledge

of the distant location. Contemporary telephonic communication has, however, become increasingly de-territorialised and de-racinated, in effect promoting dialogue between nomads, obliterating the concept of familiar location or environs. It is not without irony that the first question posed during a mobile phone conversation is not 'How are you?' but 'Where are you?' with the inevitable response 'I'm on a bus!'

Along with mobility the cell phone has initiated forms of social evolution (or devolution). Originally phones were mounted on walls their earpieces at head height — it was, of course, impolite to talk to a stranger in a sitting position, it was also considered improper to 'chat' on a telephone (something apparently women were inclined to do). Early telephone companies went to considerable lengths to reserve the device as a business machine and, in some cases, strove to keep them out of private homes! Nineteenth Century telephone aficionados would be alarmed at the prosthetic application of Bluetooth headsets and the spectre of the glossaliaic pedestrian merrily talking to invisible correspondents and gesticulating wildly.

Wirelessness, smallness and mobility — the Tranny and the Boom-Box

The development of transistors delivered miniaturisation and *ipso facto* true portability, the consequence being that radio and phonographic replay now could leave the home (and the power outlet) to head for the streets, the beach and the ghetto. This Sonic Assault has two phases: Intrusive and Implosive audio. The first of these audio modalities, the invasive or expressive, is exemplified by the Ghetto-Blaster and its more recent incarnation, mega-bass low-rider vehicular sound systems. Whilst the old boy with the transistor glued to one ear, listening to the cricket (or the ball-game) is not considered as noise pollution — the dude with the Boom-Box is trying really hard! The Ghetto-Blaster in effect re-ritualises sound in public space and makes an unequivocal claim on cultural space.

In marked contrast to the expressive nature of the Ghetto-Blaster, we are currently witnessing an implosion of Audio-Worlds (as if in recoil from an overload of Urban stress) into the micro-acoustic-ecologies of the Walkman, the cell phone and the iPod. This tendency initiated by the Walkman and now conferred upon the iPod nullifies the vis-à-vis of Public Space transforming collective experience into serial withdrawal — A retreat, perhaps a respite from the press of bodies in the commuter train, an escape from the pressure of being a (social-being) within the anonymous Crowd. The general and desired use of mobile audio entertainment is to isolate the user from anonymous public situations (Crowd) and transitory geographical/spatial situations (Transit), Public Transport being the ideal nexus. The audio-bubble effect also extends to the monotony of the gym treadmill, the boredom of air travel and ironically to the delights of jogging.

To be optimistic we might embrace the greater community of consumers and indulge in the simplistic embrace of the notions of the freedom of choice within the free-market economy of music(s), especially if we adopt the view that now all music is *world music*, a commodity form set free from ethnic and cultural boundaries by the corporate sector. We may now assert and affirm our individuality by the esoteric nature of our playlists, sharing them even, in generous acts that freely give that which is not legally ours (sorry Sony records but thank-you Limewire).

That which remains...

The counterpoint to an audio world composed of myriad private mobile soundscapes is found in its negative envelope, that which remains as public aural space inhabited by those weak and fractured signals that escape from earbuds and headphones. Unlike the hauntingly somatic riffs of a street saxophonist, playing to no one in particular late at night, these are transient B.P.M. signals just audible enough to attract the attention, but instantly discarded as irrelevant and redundant. The ear constantly hunting but failing to identify meaningful patterns; a mechanism reminiscent of British Army Intelligence audio torture, once practised against IRA political prisoners!

Re-Situation and re-immersion

Other recent technologies are, however, starting to reverse these paradigms of isolation and withdrawal from social and geo-spatial situations. Locative forms of media are beginning to 'situate' the participant in a geographic and cultural context at both the theoretical and experiential level that potentially might reinstate an electronically mediated vis-à-vis.

AudioNomad test rig on Sydney Harbour 1996.

The AudioNomad project may be simply defined as an augmented audio reality system[4] that adopts a naturalistic or landscape metaphor of our sonic experiences, operating via a metaphor of sonic-cartography and able to co-locate virtual audio with physical features of the environment.

There is a marvellous passage in *The Life and Opinions of Tristram Shandy*[5] that describes a unique map, made at one to one scale; that is a map made to fit exactly over the physical features it represents! The AudioNomad research programme operates a sonic cartography with very similar characteristics, due to the potentially vast scale of the geographic area available to the GPS enabled system and amplified by the fact that the sound composition is performed in real time by the mobile presence of the user traversing real geography.

Yet, another literary source provided the conceptual impetus for the development of a sonic cartography able to seed a physical environment with virtual audio memories. The storage and retrieval of audio content within a complex soundscape, virtually associated with real landscape objects, has its precedence in the classical mnemonic system for storing rhetoric.

In *The Art of Memory* Frances Yates[6] paints a vivid picture of the antique technique that enabled Orators to place memory objects (such as lengthy quotations) within the labyrinthine spaces of classical architecture. By visualising an architectural interior, real or imaginary, the speaker might place here a red cloak over a sculpture (as a mnemonic trigger) and there, a sword on a table to locate yet another passage. By memorising a stroll through this virtual architecture, an Orator could retrieve a vast amount of correctly sequenced rhetoric.

The AudioNomad project transmutes such imaginary architectural space into the cartographic space of a digital map (itself a representation of the physical site of the project) and develops a complex sonic landscape by assigning soundfiles, trajectories and other acoustic and navigational properties, at multiple locations within this virtual domain.

Whereas the classical rhetorician would re-play a walk through an imaginary architecture, to sequentially retrieve the elements of a speech, the participant in an AudioNomad project literally walks in a real environment, their position and orientation driving the software to render an immersive and dynamic soundscape via surround enabled headphones. The user perceives individual audio events to be 'located' at specific points in physical space, and as these share similar acoustic properties with the surrounding ambient sound, a seamless nexus is formed between the real and the virtual suggesting a type of parallel audio world, in which memories of particular sites are invoked alongside contemporary reality.

The "Regal" equipped with 12.2 surround array for "Syren for Port Jackson" 1996.

Futures and conclusion — Edison's Ars Memoria concept for the phonograph.

> "Your words are preserved in the tin foil and will come back upon the application of the instrument years after you are dead in exactly the same tone of voice you spoke in then…..This tongueless, toothless instrument, without larynx or pharynx, dumb, voiceless matter, nevertheless mimics your tones, speaks with your voice, speaks with your words, and centuries after you have crumbled into dust will repeat again and again, to a generation that could never know you, every idle thought, every fond fancy, every vain word that you chose to whisper against this thin iron diaphragm". [7]

Edison conceived the phonograph plain and simple as a memorial device, a means to archive the transient voices of relatives as a sonic counterpoint to the family photo album. That the future of the phonograph was to rapidly evolve into a commercial device driven by musical entertainment is with hindsight an obvious irony, but one that Edison both missed and was resistant to. Naturally, we should not overlook the fact that Edison was partially deaf! [8]

GIS worlds — the environment as a polyglot audio archive.

Notwithstanding the overwhelming use of audio recording technology harnessed to the commercial mill of the music industry, Edison's presentiment concerning the mnemonic use of audio has a ring of truth. The potential to develop intelligent, interactive audio-cartographies, as outlined in the AudioNomad project, in which powerful GIS technologies[9] serve ubiquitous mobile devices may well see a world in which audio

memories reside in every nook and cranny, attached to URLs domiciled at the nodes of a global 10cm grid.

In the vein of *Pygmalion*, the Edison Company turned its hand to manufacturing talking dolls, producing several thousand in the 1890's. This uncanny embodiment of the voice in the mechanical flesh of a puppet is today transformed into a range of (not so smart) mobile devices, but devices that will within a short period of time, become intelligent companions, potentially far more sensitive to physical location and the invisible flows of data than ourselves.

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1 St. Augustine of Hippo a series of thirteen autobiographical texts by written between AD 397 and AD 398. Confessions.

2 Schafer, Raymond Murray 1977 The Tuning of the World. Random House Inc.. ISBN 0394409663.

3 Acousmatics (from the Greek Akousma, what is heard) has its origins with Pythagoras (6th century BC) who delivered his oral teachings (oracle-like) from behind a curtain in order to prevent his physical presence distracting his students, a technique designed to grant them a pure focus on the content of his words. In 1955 the term "Acousmatique" was employed by the poet Jérôme Peignot, at the beginning of musique concrète, as an adjective, meaning a sound that we can hear without knowing its cause, and to designate the distance that separates a sound from its origins, by obscuring, behind the impassivity of the loudspeaker, any visual elements that may be associated with it. Then in the early 1970s, Francois Bayle introduced the expression Acousmatic Music while director of the Groupe Recherches Musicales in Paris, employing it to denote a specific kind of music, as an art of projected sounds shot and developed in the studio, projected in halls, like cinema.

4 Augmented Audio Reality refers to a system in which allows an auditor to experience ambient/local sounds whilst simultaneously overlaying these with additional audio information. Virtual Audio Reality refers to a system that immerses an auditor in a dynamic and spatially active audio environment, which may or may not be linked to a corresponding visual domain (real or virtual). The audio supplied is intended as a total environment and supplants any local or ambient sound. VAR is not essentially concerned with a functional relationship to events and objects in physical reality, it is best employed in totally VR environments or where there is a desire to diminish or suppress the links between the visual and the aural in the quotidian world (as in the iPod). AAR on the other hand has a vital concern to link synthetic audio events and compositional; strategies with aspects of the physical environment through which the 'AudioNomad' is navigating (whilst simultaneously navigating the parallel cartographic/sonographic software).

5 Sterne Laurence 1759 to 1767 The Life and Opinions of Tristram Shandy, Gentleman London.

6 Yates Francis 1966 The Art of Memory University of Chicago Press.

7 Thomas Edison in a presentation to the New York Post.

8 As was his first wife Mary to whom he proposed by tapping on her wrist in Morse code; their first two children, were nicknamed "Dot" and "Dash".

9 Geographical Information Systems — or Geomatics, relates data to a geo-spatial coordinate, thus facilitating the recent development location sensitive interactive systems.

LIVING-ROOM2 — Domesticating the Multiverse

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The research project "living-room2" is an ironic take on future consumer culture. It is a physical room decorated with familiar furniture and objects from daily life: a white couch, a cabinet, a mirror, reminders of the global player IKEA. Wearing a HMD, being tracked when changing position and carrying a handheld device, visitors can interact with the space and furniture interfaces and select different narratives and landscapes.

Introduction

The project title 'living-room2' is ambiguous. It can be interpreted both as a living room and a room that actually lives. 'living-room2' intends to integrate these two concepts, aiming to create a dynamically extendable room by using Augmented Reality (AR)-technology.

The project's main research question is: what could augmented reality mean to us in daily life, and how could it influence the future design of domestic spaces? Will we accept the virtuality of AR in daily life as a reliable way of perceiving? If so, what new language and level of quality would this perception require in terms of aesthetics and design?

'living-room2' proposes a design vocabulary for a hybrid, 'third' reality, that merges 'real' and virtual space in a credible way. It presents a scenario for a future experience of domestic hybrid reality spaces and explores new ways of seeing, perceiving and interacting.

Instead of merely developing new AR tools for applied fields, like assembling aids or visualization tools for (interior) design, architecture or communication, the project wishes to question the specific 'trait d'union' between virtual and material spaces. This is articulated in the project's specific approach towards AR as an immersive application: the room dynamically negotiates between 'real' and 'virtual'. Thus, the room itself has become the object of transformation. As an extended space, it embodies a hybrid between a dynamic environment, an immersive movie and 'interactive wallpaper'.

'living-room2' refers to a possible future domestic culture of escapism and consumerism. Just as visitors would normally purchase their furniture, now they can customize their desires by selecting their imaginary landscapes or visualizing their fantasies. 'living-room2' could be seen as a simulation of a 'future lifestyle experience'.

Reality jamming: synchronizing realities

Since the birth of the computer and the rise of the Internet, different theoretical concepts of parallel virtual worlds have emerged. Examples include Neil Stephenson's Metaverse,[1] a fictional, virtual 3D world inhabited by avatars, and David Gelernter's Mirror Worlds, on-line, real-time mirrors of the physical world.[2] These concepts, both written in the early nineties, describe the rise of virtual microcosms, screen-based worlds that exist parallel to the physical space.

Though in 2008, the universes of metaverse and mirror worlds have left the screen and entered our daily environment. Ubiquitous and embedded computing applications are omnipresent, weaving a hybrid landscape of virtual and material spaces. Parallelism is being replaced with a more inclusive approach — one that merges different realities in terms of time, space and matter. Which possibilities could this 'third space' offer and what does it mean for our perception of 'real'?

The concept of 'multiverse' might offer an appropriate approach for our ubicomp society. In *Minds, Machines, and the Multiverse. The Quest for the Quantum Computer* (2000)[3], Julian Brown proposes a 'multiple universe' in which 'real' and virtual seamlessly collide. Recently in

Screenshot of the scenario "ECOSYSTEM"

a presentation in Amsterdam, marketing guru Joseph Pine introduced an applicable model of this multiverse for communication purposes. It included eight worlds in which different co-relations between space, time and matter are negotiated (Physical world, Augmented reality, Augmented virtuality, Warped reality, Mirror world, Alternate reality, Physical virtuality and Virtuality).[4] His main question: how can we communicate between these different worlds?

For design purposes, the multiverse raises similar questions: how to synchronize different spaces aesthetically and create a seamless experience? In other words: how could we design the multiverse? 'living-room2' aims to create a simultaneous experience of the 'real', 'the mediated' and the 'virtual'. It explores possible relations between real – real, real – virtual, virtual – real and virtual – virtual. To create this immersive experience, the project focuses on both audiovisual (extended vision, multiple perspective) and sensory perception in material space. For example, 'living-room2' examines the function of touch as a means to synchronize physical and virtual space. Objects and space are used as intuitive interfaces. An example is the sensory equipped furniture visitors can manipulate both physically and virtually, uniting time, space and matter from different realities.

Domesticating the multiverse?

'living-room2' explores the future of the concept 'home', a private space that is becoming more and more commodified by global players like IKEA. However, as a personal space, a living room also reflects our identity. The intimacy of our home encourages us to visually extend it with our desires, fears and fantasies. 'living-room2' approaches the room as both a physical and mental extension of ourselves. Integrated in one space, it becomes a new room, a hybrid private place.

Could this be our future experience of 'home', an extension of our minds? What would our domestic multiverse look like? And for the field of (interior) design: will its future involve the integration of mental and physical space, and if so, what would be the ramifications?

'living-room2' offers two main cross-world narratives that reflect possible fantasies and desires connected to our home environment. 'AR-Décors' is an ironic fiction referring to commercial uses of AR. When entering the space, the visitor becomes a future 'AR-Décors' consumer, browsing the new 'Habitat-Collection', which offers a broad spectrum of exotic areas. This reflects our desire for both escapism and the sublime landscape — as an extension of our domestic space.

Exhibition at the Museum of Communication in Bern, Switzerland, July 2007

'Ecosystem' transforms the audience into a 'Fremdkörper' in its own environment. It invites visitors to delve into an obscure ecosystem inhabited by virtual, abstract creatures that interact with them and eventually take control of the room. In this artificial space, 'Ecosystem' confronts us with our alienation from nature.

As a cross-world narrative experience, 'living-room2' offers the interactor options to simultaneously escape and to comfortably remain home. The desire for the domestic and the alien landscape come together in one space.

A future of home design

Recently, as a follow-up to 'living-room2', the spoof website 'AR-habitats' was developed. 'AR-habitats' intends to visualize future scenarios for domestic multiverses. More strongly than 'living-room2', 'AR-habitats' examines 'intimate landscapes' that arise from the private space of home. For this purpose, it introduces options such as bio-feedback and neuro-feedback sensors. New genres include 'spiritual', an atmospheric world co-created by biofeedback sensors that measure the user's mental state, and 'horror', a game-like narrative in which the pace of the story is determined by the user's heartbeat.

Though 'AR-habitats' is created to present an ironic view of technology and design hypes, at the same time it proposes a future scenario for (interior) design in times of ubicomp and multiverses. From this perspective, the project wishes to encourage design practitioners to think critically about their future role as mediators between mental and physical spaces. Would we allow IKEA to invade our private mental space?

living-room2: http://projekte.idk.ch/livingroom
AR-habitats: http://arhabitats.com

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GPS Film: Not a Moving Picture, A Picture Moving

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Introduction

GPS Film of the invention of a new form of film-viewing experience that uses the location of the viewer to control the story. On a mobile device, a film is assembled in real time based on the location and movement of the person watching it…location-based mobile cinema. The project included the development of a software application that assembles cinematic narrative based on user movement and location, device application programming that uses existing standardized players in this new way, and the production of film content for the system.

The system

Using a GPS-enabled PDA, the hard drive of the device stores the film and the programming required to select clips based on location. The device recognizes the location of the viewer and plays scenes tied to those coordinates. As the viewer travels through pre-defined ***zones***, the movie changes when one zone is entered and another is left. The GPS receiver contacts the satellite, the coordinates are loaded and then used to change to the next scenes in the device's database. The result is a new type of film experience that is tied to the movement of the viewer.

Narrative structure

How does one tell a story when any scene can be viewed before any other, when the amount of time within a scene can change based on the speed of travel — train, taxi, walking? How can it make 'sense'? GPS Film entered a new terrain of storytelling. The film's narrative needed to change with each route, direction, speed, and total distance…yet continue a consistent theme, with recurring characters, and an overarching story. Part of the research involved solving this problem by finding a narrative formula that could apply to any story.

Each time the machine is powered on, the opening titles play and the ***trigger event*** is shown. This event can be comic, dramatic, emotional — the viewer sees a bank robbery, a couple kiss, etc. This event always plays first. It gives a compelling moment that is refreshed in the viewer's mind each time the player is turned on. The device then reads the location of the viewer to determine the zone they are in. The movie shows 'establishing shots' of that area, e.g. views of the shophouses of Chinatown. A title then displays that states "five minutes ago" or "100 years earlier" or "last night", etc. depending on the scene in that zone. Passing

through each zone tells the viewer more about the initial trigger event, giving it deeper meaning and depth. As the viewer explores the zones, he begins to understand how the trigger event came to happen — how the couple arrived at that first kiss, how the bank robbery came to occur. This flashback structure allows for the timeline of the story to be viewed in any order and still make sense.

"Nine Lives": The first GPS film

The selected story is a populist, slapstick comedy. This genre was chosen to prove that the technology was both flexible for any type of story and something the average viewer could enjoy. Downtown Singapore was chosen for the prototype as it provided a wide range of visual possibilities — modern offices, old shophouses, alleys, parks. "Nine Lives" originated with the "Suspect it, Report it" warnings on Singapore's public transit system. The writer envisioned an HDB grandmother (called 'Aunties' in Singapore slang) taking these warnings a little too seriously and causing a crazy web of misunderstandings, collisions, and false identities. The film introduces a new Singaporean super-hero, "Auntie Vigilante". The thirteen-character ensemble piece intertwines star-crossed young lovers, dim-witted criminals, a movie-loving Indian cabbie, and a lively cast of other characters.

Programming

Original attempts to create the code in Linux using the Qtopia Software Developers Kit were scrapped due to scarce support. Even for PDAs, the Windows OS is more popular than Linux-based platforms. The application was developed for both laptops and mobile devices in .Net Framework and is comprised of two main components — one integrates the mobile device and the GPS (to obtain coordinates) and another plays the corresponding movie clip in an embedded movie player. An interactive interface was designed to allow the selection of any preloaded movie. Each GPS film is associated with a specially formatted text file consisting of the various zones, their coordinates and the corresponding clips. An installer was also developed so that the application can be conveniently installed on any computer.

The device

The original plans to design and manufacture a device specific to playing GPS movies proved unnecessary — the recent rapid advances in mobile hardware suddenly offered several players with GPS capabilities. The ASUS MyPal 696 GPS PDA was selected due to its appropriate design — the GPS antennae was subtly incorporated, the stainless steel case was slim and durable, the 3.5 inch screen was anti-glare. It also ran on Microsoft Windows Mobile 5.0…an easy next phase in the application's development. A 2gb SD card was added to allow for the storage of the film clips.

Determining the zones

The team walked all of downtown Singapore to determine the best delineation of zones for storytelling, for timing, and for most commonly travelled routes. Once the nine zones were selected, Google Maps was used to get precise coordinates, both longitude and latitude, of the borders of each zone.

The programmers developed a procedure for the device to recognize the zone in which a user is traveling. Once the longitude and latitude of each zone's corners are established, the location of the user is determined by successively calculating the angle subtended by the user at consecutive pairs of vertices of all the zones in counter-clockwise manner. Dot products of vectors were used to determine these angles. If the angles total 360 degrees, the user is inside that polygon. This mathematical formula is based on the fact that the sum of consecutive angles subtended from a point within any polygon (rectangles, pentagons, triangles or any arbitrary shape) to all the edges is always 2 pie radians or 360 degrees. Conversely, if the user is standing outside the polygon, the sum of the angles cannot be 360 degrees. The algorithm throws an exception when the user is exactly on any vertex — the exact line between zones — and additional code was written to adapt to this situation. As soon as it is known that the user is in a particular zone, the corresponding video is played. When the user is outside of the entire navigation area, the device plays a generic promo for the film.

Summary

People now watch movies on trains, in taxis, on buses. Our new-found mobility is changing how we enjoy cinema. And because of games, we're becoming used to stories being told by exploring an environment. GPS Film takes these concepts off the computer and back into the real world. Story navigation becomes a physical, viewer-controlled experience; a journey of fiction can now be tied to a journey of fact.

The team

Scott Hessels, Design and Concept
Tan Seah Hiang (Kenny), Script and Director
Neha Chachra, Application Programming
Aswath Krishnan, Device Programming

www.gpsfilm.com www.dshessels.com

Patent pending, Nanyang Technological University and Scott Hessels

A Medial Perspective to Ecological Concerns

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Based on projects from the exhibition *Ecomedia. Ecological Strategies in Today's Art* (2007 at the Edith-Russ-Site for Media Art in Oldenburg) the presentation is devoted to the topic of ecological change, which, among other causes, has been brought about by human interventions in existing ecosystems. Environmental catastrophes and global warming are the results and consequences of a highly civilized and industrialised way of life. Ecological rethinking and long-term action are among today's most important tasks if we want to avoid further damage to the environment and thus to our own living space. Michael Shellenberger and Ted Nordhaus, the authors of the book *The Death of Environmentalism*, describe the present day as the post environmental era. Instead of recounting scenarios full of gloom and doom, they emphasise the necessity of constructive political policies and a positive definition of the remaining manoeuvring possibilities to achieve a sustainable development: "Environmentalists have spent the last forty years telling people what they can't have, can't do and can't be. We need to offer a vision to the entire human race about what we can have, can do and can become. We need to speak as much to people's hopes as to their fears."[1]

With the exhibition *Ecomedia* the curators (Sabine Himmelsbach, Karin Ohlenschlaeger and Yvonne Volkart) tried to expand the political, social and economic debate by art's voice that questions our behaviour and demands that we deal respectfully with our environment and natural resources and which shows us the possibilities of how we can make change a reality. With eighteen different artistic positions, the exhibition wanted to show what art — especially media art — approaches and strategies are capable of contributing to these questions and problems.[2] Works of art have been presented that deal with the complex field of ecology, with sustainability, with renewable energy, resources, global foodstuff transportation, as well as visionary approaches to solving the problems related to these subject matters. Various aspects of ecology, i.e. the science that examines the interrelation of organisms to each other and to their environment, have been demonstrated and discussed. The ambivalent and often paradoxical relationship between man and nature is at the forefront here, as is the role, played by technological developments regarding the environment and how the electronic media can be responsibly used as a means to communicate information about the condition and demands of the ecosystem. In addition, our lifestyle, the wasteful dealings with fossil resources as well as recent social and urban developments have been critically examined and considered.

The ecology movement of the 1970s and 1980s had already given up the concept of nature as a natural given. The biologist and feminist Donna Haraway speaks of the "reinvention of nature,"[3] and describes the changes and expansions of ecological systems into which man has intervened with the help of genetic engineering and

Figure 1: Christoph Keller, The Whole Earth, 2007
Installation view, Edith-Russ Site for Media Art, Oldenburg

cloning. The work *GenTerra* by the Critical Art Ensemble shown in *Ecomedia* uses this theme as its starting point. Based on participatory dealings with new technologies

and transmitted via performances and workshops, CAE attempts to advance the cause of rational dealings in the interaction between nature and technology and to criticize the hysterical rejection of any type of technical means. The image of the earth as the Blue Planet is the point of reference for German artist Christoph Keller in his work *The Whole Earth*. A video projection on a weather balloon shows white clouds gliding by against a blue sky. Every two minutes, however, a roaring aircraft pierces the hovering sphere. The idyllic image is already a fiction that Keller deconstructs in his installation in a very poetic way.

Figure 2: Transnational Temps, EcoScope, 2007
Installation view, Edith Russ Site for Media Art, Oldenburg

Many of the works shown in *Ecomedia* are devoted to the potentials offered by the use of the media to comprehend ecological questions. They draw on the methods and results of scientific research and utilize global communications technologies to actively integrate viewers into the projects. In a society influenced by medial and electronic networks, artists increasingly provide insights into scientific technological world designs. They create action spaces in accordance with visionary approaches and risk innovative looks at well-known facts and problems. New York artist Andrea Polli, for example, utilizes the interpretation of scientific data for video and sound installations developed in an intense cooperation with scientists, urban planners, and meteorologists. Polli translated the international measurements dealing with air pollution or the weather into striking experience spaces in which the abstract data can come into contact with emotion by means of images and sounds.

Another example for this approach are the projects by American artist Natalie Jeremijenko. Her works have their basis at many different points of intersection — the

communication between man and animal, the changed living conditions of man and animal in the urban space, as well as social and environmental influences and their manipulation by means of genetic engineering. Her works join engineering, biology, and art into a unit to deal with socio-political questions and thereby offer visionary solutions. All of her projects actively address the viewer and involve him socially. The cure is therefore not the credo of her new *Environmental Health Clinic*, which she was presenting in Oldenburg, but rather the invitation to get involved: "You walk out with a prescription not for pharmaceuticals, but for action."

The works gathered in the exhibition are concerned with calling attention to pressing ecological questions and contemporary problems with the intent of achieving positive changes. The focus of the works chosen for inclusion in this exhibition is their media reflective approach. The employment of techniques from electronic media permits innovative collaborations between art and science. The recording of data, the visualisation of strategies and making scientific information audible make new worlds of perception and insights possible in which a wide audience can participate. The project *EcoScope*, which has been produced for the exhibition by the artist group Transnational Temps, creates a "telematic forum for public opinion about the environment using internet media. It leverages scientific visualisation, time-lapse satellite imagery, landscape photography, and environmental journalism to create a framework for conversation and discovery."[4]

Media art can contribute to making knowledge about complex structures and systems available to many people by transforming the abstract into sensorial information, images, and sounds.

In the future, the task will be to master the challenge of collective co-existence in a complex network and to gauge which actions are forward-looking in terms of further developments. While it could not be the exhibition's task to present solutions for all of these difficult questions which are of concern to everyone, the participating artists and curators wished to create a space for reflection, exchange, and critical debate in addition to presenting projects and suggestions for action that make views to future utopias possible.

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1 Michael Shellenberger and Ted Nordhaus, "FAQ: Post-environmentalism**"**. In: Max Andews (ed.): *Land, Art. A Cultural Ecology Handbook*, RSA and Arts Council England, Cornerhouse Publications, Manchester 2006, p. 199.

2 The exhibition title was inspired by the lecture *Eco-Media*. *How the Natural World is Transforming the Nature of Media* delivered by the American artist Andrea Polli during the symposium at the ISEA (Inter-Society for the Electronic Arts) Festival 2006 in San José, California.

3 Donna Haraway. 1991. *Simians, Cyborgs and Women: The Reinvention of Nature*. New York and London: Routledge.

4 Transnational Temps project statement.

Losing Control: Looking Beyond the Surface of the Aesthetic Interface

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This paper makes a critical analysis of the characteristics and priorities of the "Aesthetic Interface" (AI) (Manovich, 2006), distinguishing them where necessary from those of the conventional Graphic User Interface (GUI). Rather than simply cosmetic, it is argued that the highly stylised, overt nature of the AI represents acceptance and exploitation of the mediatory role of the interface. It is proposed that the AI often avoids standard interface design conventions in order to disrupt expectations of efficiency and instead elicit a state of "mindfulness" in users. Play is identified as a vital device in this quest for user attention. In conclusion, creative requirements are considered and paralleled with those of established media already expert with emotive, experiential devices.

The communication capacity of the Graphic User Interface (GUI) has conventionally been understood semiotically with the interface being "read" by the user in order to comprehend the mental models of the underlying system. Apple's desktop interface with its files and folders metaphor clearly illustrates the capacity of the GUI to provide insightful representations of abstract functionality and data. Acknowledging the virtual nature of the GUI, semiotic morphism (Goguen, 2000) highlights its ability to instantly change its "skin" and present new semiotic translations. Using a familiar GUI skin however can improve user recognition, and translations can be aesthetically rather than functionally oriented. While this describes a form of GUI aestheticastion the significance and distinction of the AI is that it involves the aesthetisation of interaction rather than merely a surface styling. The AI's combination of animation, sound and input must be experienced over time rather than read in a static sense.

The iPhone interface exemplifies the AI's experiential form. Screens arrive and depart rather than simply appear, with the sliding, zooming, revolving transitions creating an impression of a vast volume of space stretching well beyond the phone's physical dimensions. Users press, tap, stroke, push and pinch. These gestural controls combine with the highly responsive cinematic visuals to create a synesthetic relationship between the user and the graphic elements. Interaction is no longer a means to an end but an end in itself, a destination where users choose to dwell and play.

Play is a vital component of the iPhone experience and the AI generally. The nature of the play supported is incidental or ambient, but it does ask the user to "devote significant emotional, perceptual and cognitive resources to the very act of operating a device" (Manovich, 2006). Far from trivial or childish, Csíkszentmihályi's Flow theory (1997) describes the Zen like state that a person enters when engaged in a suitably challenging level of play. The complexity of our electronic devices, in particular the PC, requires longer and more demanding user interactions in order to deliver their benefits and play becomes an important means of making these interactions less onerous, perhaps even enjoyable. Apple's Time Machine re-imagines the dull task of file backup as a portal where users can travel through time to retrieve lost data. Restoring files is typically associated with high degrees of stress as one worries about the loss of irreplaceable resources, but Time Machine's visualisation of floating back through your computing past makes the restoration process enjoyably nostalgic.

Reeves and Nass' "Media Equation" claims that human-computer interactions are governed by the same social conventions as human-human interactions. Therefore, a functional efficiency that is tolerated in a work environment may be confronting or insulting in a relaxed social setting such as the home. A device such as the iPhone is not a puzzle to be solved or a mission to be accomplished but an object to be related to, and its playful interaction tells us that it is friendly and fun. Brands have long used aesthetic interaction as a character in their online promotions. Where the "how" is as important as the "what", playful interaction can be a powerful marketing tool as hundreds of websites featured at fwa.com demonstrate. Millions of fwa visitors flock to the sites it lists to experience their novel presentations and interaction despite the content, which in many cases is the same commercial propaganda that users attempt

to avoid in traditional media representations. Seeing brands enlist the interface for marketing is unsurprising and consistent with their traditional media strategies. More importantly, using the interface to attract and persuade, challenges the supposedly altruistic human-centred aims of conventional GUI design which sees the interface as a medium of instruction and control rather than entertainment.

Standardised design conventions have been advocated in order to improve user recognition and reduce cognitive load as per Krug's usability text "Don't Make Me Think!" (2000). The AI's use of unconventional, novel presentation and input is at odds with these aims of transparency. Niedderer's concept of the "performative object" (2006) is more useful in understanding the benefits of the AI's playful experiential theatrics. In simple terms a performative object is designed to disrupt user expectations in order to break through preconceptions and incite *mindfulness*. Dunne refers to the poetic which, like mindfulness, aims to elicit awareness: "By poeticizing the distance between people and electronic objects, sensitive scepticism might be encouraged, rather than unthinking assimilation of the values and conceptual models embedded in electronic objects" (2005). The overt theatrisation of the AI could be construed as a performative or poetic device intended to incite mindfulness, however the examples described by Manovich (2006) do not elicit the "sensitive scepticism" of which Dunne speaks, and instead their user affirmation is very much in the service of consumption. hi-res' promotional websites for movies such as "Requiem For A Dream" (2000) and "Donnie Darko" (2001) demonstrate something closer to Dunne's poetics, with each site featuring cryptic interfaces that intentionally disorient and test the user. While sometimes disturbing and frustrating, these challenging experiences are an apt promotion for their equally challenging parent movies.

The AI user accepts loss of control in favour of aesthetic experience, but for the interface designer the AI introduces new responsibilities: to attract, engage and entertain. The success of a mainstream AI such as Apple's OS X has seen it widely imitated, diluting its novelty and aesthetic effectiveness. In performative terms, ubiquity reduces the ability to disrupt expectations. As innovative interface devices succeed they are popularised and normalised, requiring designers to invent new and novel ways to break expectations and regain attention. Thus the AI demands that GUI designers grapple with notions of perception as well as cognition, emotion as well as instruction, and fashionability as well as functionality. Like producers in cinema and theatre, the AI designer can be understood to interpret a source "text", which in the case of the GUI is a set of generic functions and data. And as with cinema or film, the AI designer must demonstrate ingenuity in their metaphorical representation of the source.

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"Whispers of Harmony" Is the Pythagorean Notion of Harmony Still Relevant in Our Times?

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My talk is based on two of my multimedia art projects:

- "Tones and Whispers", realised with the support of the Institute of Cognitive Neuroscience, London, UK
- "Life Matters", initiated at the International Centre for Genetic Engineering and Biotechnology in New Delhi, India

Each of us is a fragment of the space-time continuum, made of the same components as the rest of the world and, on atomic level, immortal.

This contemporary awareness would have no meaning without the Pythagorean idea of the World's Harmony being the most pervading and beautiful concepts developed by the human mind. Expressed in consonant relations between macro and micro components of the Universe, it gave rise both to science and art. Pythagoras believed that the whole matter emanated tones, that the whole world was music. He divided it into Musica Mundana (later known as Music of Spheres) and Musica Humana (music of the human body). He based his harmonic model on *number* and the melody of structures filled up the space. In the 12th century, J.Kepler changed it into polyphony introducing a different scale for each planet relevant to its distance to the Sun — the centre of that time Universe.

His tractates "**Harmonices Mundi**", was the last attempt to synthesize all the accessible knowledge in order to reveal the ultimate secret of the Universe. His ambition failed and the fragmentation of human experience continued: science separated from religion, substance from form, matter from spirit.

Nevertheless the dream of Harmony remained. The contemporary interpretation of J.Kepler's "Music of Spheres" opens the Golden Record, our message to far away civilizations, carried on boards of Voyagers, testifying for the potential of human imagination and cognition.

For "Tones & Whispers" Kepler's musical notations were performed on theremin (instrument using radiowaves) and visualised in the form of spheres surrounding the planets. Animated by the musician's hands they circulate inside the visual landscape made of images from fMRI brain scan and distant galaxies. The planetary melodies merge with sounds of human brainwaves, everyday environment and far off cosmic space creating a multilayered composition. There is no center but the human brain, no other space than that confined between hands.

After 1905, there were no more absolute measurements, only relative measurements depending on the observer's position. In this *Anno Mirabilis* A.Einstein gave each of us the right to equally misshaped and fragmented access to the World deprived of a any determined nexus and point d'appui.

The end of the Euclidean order activated the search for dimension that led to the discovery of self-similar fractals. The repetition of simple patterns, developing into more compound structures, recalled harmony.

The Cosmic Accord as Kepler assumed, reverberated once at the moment of Creation (according to present calculations 13-15 billions years ago) filling the universe with the eternal polyphony. Much later a new line joined in: **the music of life**, scored up in genetic information that assures the persistence of its performance.

The genetic code, composed of repetitive variations of ACGT — with slight differentiations — is common to all life on Earth, having evolved from a single moment that took place around 3 to 5 billions years ago.

The genetic effect is the result of an orchestration of groups of genes, the dynamics of which are extremely sensitive to perturbations and cannot be fully foreseen. The chaos theory left no hope for any deterministic and steady performance. Harmony assumed shape of the temporal state of synchronization and the readiness of different systems to interact and correlate their random

behaviors became a key feature of our unstable micro and macro, animated and unanimated worlds. These divisions, however, underwent radical changes.

Science asserts that, on the biological level, only DNA is alive; making the rest of the organism (including ourselves) merely a part of genes' much larger habitat. The vital feature of a gene is that it contains knowledge about its niche and causes the environment to keep that knowledge in existence. The gene itself has no property that would distinguish it from unanimated matter: life turned out to be very contextual.

The project "Life matters" refers to this new perception of life that puts the fundamental human questions (How did we come here? Who are we? Where are we going?) in a new light. Initiated at ICGEB, it was inspired by the research on pathogens that have been accompanying human race from its beginning (malaria) as well as new ones foreshadowing the future (SARS). The project bridges micro and macro processes, computer modeling with physical surrounding, scientific data with everyday experience creating a contemporary multidimensional environment. Designed as an artistic laboratory, it aims to provoke personal reflection on the relationship of the man with the rest of his universe that makes the matter of life matter.

It seems that the main characteristic feature distinguishing human beings from other organisms is the highly developed consciousness of existence.

Consciousness is as an emergent phenomenon resulting from the "harmonious functioning" of an entirely unconscious system. It is a property of the human brain embracing all our thoughts, emotions or beliefs which, as experiments revealed, are encoded as spatio-temporal patterns of its neural networks, driven by DNA.

Is then the nature of our thinking the consequence of the way our brain has developed? Is the model of reality it creates a fruit of Darwinian selection? If so, the same processes might have prevented us from other directions of reasoning and a "general theory of epistemological and ontological relativity" may embrace other logics, other mathematics, other micro and macroworlds and other realities different from our (human) standards.

Our reality is all that we can get information from. We use artificial mediators, cultivate various experimental methods and theories linked to them in order to "perceive with the mind" that what we cannot perceive with our economical *sensorium*.

The dream of Harmony might not be the only key to the Universe but we haven't developed another one. Maybe we were not even able to; neither do we know whether it brings us closer to the Truth. Yet in this dream we find our humanity and regain our dispersed oneness. Through redefining it, reforming or questioning we activate layers of our creativity that helps us to deal with the World and gives us hope that one day the reality of knowledge will evolve into the reality of understanding.

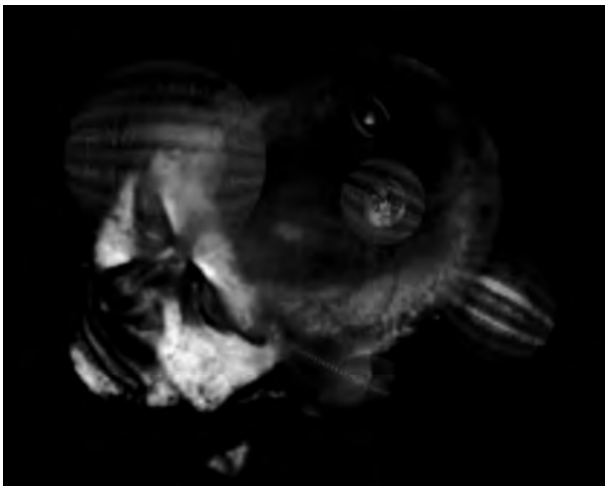

Figure 1: Tones & Whispers. Video still

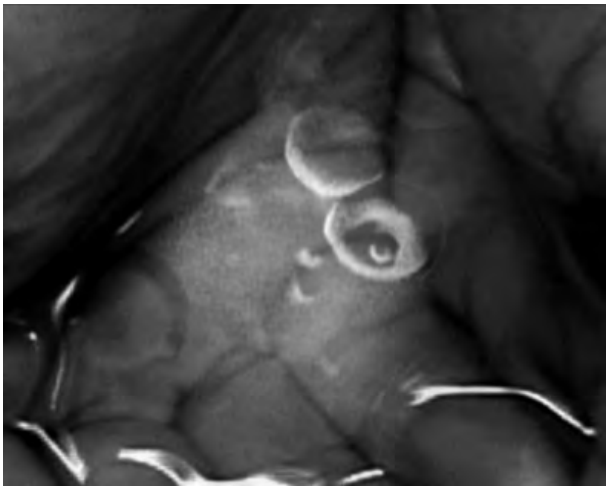

Figure 2: Life Matters. Video still

Space & Narrative Identity
(Upon Spatial and Temporal Heterogeneity and Multiple Narratives)

Klaus Hu
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Questions = abstracts

What is space like? How is space connected to narrative identity? How is space constructed by means of digital and nonlinear media as virtual or build narrative environment? How is space and cognition of space related to narrative concepts of aural and written narratives? How and when is timebased media implemented, to visualize these aural and written narratives? Maybe replacing these aural and written narratives? How is research conducted by means of relational theory or/and reflectory implementation into sociocultural representation? How does an organic container, like a painting, inform narrative identity of spatial-narrative cognition as alternating narrative identity? How has the single self become an entity and why are hybrid forms incapable of renewing the self? How is the single self able to confront the norm/status quo of globalised normativity (eg. economy)with analytical, synthecical and organic formulation of relational grouping?

Upon space

If space is moulded, with round or sharp edges like a plate of cheese, it might be an architectural form. If the surface is open or closed, it might be a sculpture. If the color's intensity and its contrast gives information about emotional, symbolic and cultural relations, it might be seen as advanced. If space is seen in a stretched, vertical or horizontal timeline, it might be a transitory or static space.

Imaginative processes

If imaginative processes are started by means of movement, light, association, emotion in rudimentary clusters, this processes can be refined into more complex settings of performance, environment or installation. By adding, or using, or creating databases of the creative process, the request of memory and time,[1] reflected as mnemopsychological strategy comes into being. How does this mnemotechnical strategy alter digital databases and why?

Timebased media

Timebased media has replaced aural and written narration and deconstructed its genres by proposing different scales of measuring and editing narrative strings, relating to film editing and models for storages of memory, thus became a construction of the narrative code itself.[2]

Research

Research has been replaced by appropriation, art-history been replaced by marketdriven forces, as well as urban mobility and sustainable development programs. They form the metacode. Art has become the testing routine for these forces and programs.

Painting

Painting, as an organic container of memory and representation, uses spatial-narrative as well as abstract codes, based on the referential tradition of painting, producing itself narrative relational codes and deconstructions of representation, where identities do perform multiple stories. But there is no main-plot, subplot, dramaturgy, coda or an end any more seen.[3]

Body – Identity

The artist uses sameness upon spatial and temporal heterogeneity for multiple narratives and identity to confront the norm/status quo of globalised normativity with analytical, synthecical and organic formulation of relational grouping. The symbolic order is blocked by proposing a different and personal view upon the visible and the invisible by the single body as filter towards one more multiple cultural references.[4,5] In Merleau-Ponty´s phenomenology of perception (first published in French in 1945), he developed the concept of the body-subject as an alternative to the Cartesian "cogito." This distinction is especially important in that Merleau-Ponty perceives the essences of the world existentially, as opposed to the Cartesian idea that the world is merely an extension of our own minds. Consciousness,

the world, and the human body as a perceiving thing are intricately intertwined and mutually "engaged." The phenomenal thing is not the unchanging object of the natural sciences, but a correlate of our body and its sensorimotor functions. Taking up and coinciding with the sensible qualities it encounters, the body as incarnated subjectivity intentionally reconstructs things within an ever-present world frame, through use of its preconscious, prepredicative understanding of the world's makeup. Things are that upon which our body has a "grip" (prise), while the grip itself is a function of our connaturality with the world's things. The essential partiality of our view of things, their being given only in a certain perspective and at a certain moment in time does not diminish their reality, but on the contrary, establishes it. As there is no other way for things to be copresent with us and with other things than through such "Abschattungen" (profiles, adumbrations). The thing transcends our view, but is manifest precisely by presenting itself to a range of possible views. The object of perception is immanently tied to its background — to the nexus of meaningful relations among objects within the world. Because the object is inextricably within the world of meaningful relations, each object reflects the other (much in the style of Leibniz's monads). Through involvement in the world — being-in-the-world — the perceiver projects around the object, in a nonthetic manner, all the potential perspectives of that object, and the perspectives of the object coming from all the surrounding things of its environment. Each object is a "mirror of all others." Our perception of the object through all perspectives is not that of a thetic, propositional, or clearly delineated perception. Rather, it is an ambiguous perception founded upon the body's primordial involvement and understanding of the world and of the meanings that constitute the landscape's perceptual gestalt.

Only after we have been integrated within the environment so as to perceive objects as such can we turn our attention toward particular objects within the landscape so as to define them more clearly. (This attention, however, does not operate by clarifying what is already seen, but by constructing a new Gestalt oriented toward a particular object.) Because our bodily involvement in the world is nonthetic and indeterminate, we encounter meaningful things in a unified though ever open-ended world. Critics have remarked that while Merleau-Ponty makes a great effort to break away from Cartesian dualism, in the end Phenomenology of Perception still starts out from the opposition of consciousness and its objects. Merleau-Ponty himself also acknowledged this and in his later work attempted to proceed from a standpoint of our existential unity with what he called the "flesh" (chair) of the world. "....Focus is drawn to the intentions, dreams and values, that have guided a persons life, despite the set backs...".[6] Eric Sween mentions forms of behavioral therapy, cognitive or logical therapy, system therapy as family interaction AND narrative therapy where a story is the basic unit of experience.

Klaus Hu, artist, curator

Born 1963 in Heidelberg, Germany. While trained in stage design, painting, photography and video, my work focuses on narrative and spatial concepts using various media.Taking part in international festivals: Sao Paulo, Brazil. JVC Tokyo, Japan. (SPECIAL MERIT AWARD). Berlin (cinema Arsenal), Germany.
WRO Wroclaw, Poland. Osnabrück (EMAF), Germany. AVE Arnheim, Netherlands.
Continued training in Visual Culture during a guest study at Katharina Sieverding, UdK, Berlin from 1998/99. Taking part in site-specific competitions from 1998 till 2005 (e.g Busan Biennal outdoor project, Arriyadh housing project, Saudi Arabia 2005, and extending my research on conceptual and curatorial topics in 2005/6, which recently have been presented for funding. Currently, I am re-researching Space and Narrative Identity, focusing on installative approaches and conceptual rolemodels in contemporary global visual culture of exchange. I took part in conferences Mutamorphosis Prague (Leonardo Forum) and Re-Place Berlin 2007.

KLAUS HU 2006 "STILL RUN NO 3" oil on canvas
150 x 150 cm

Klaus Hu is represented by VG Bild-Kunst.
For previews, please visit the links at
ARTISTSSPACE NY
http://www.afonline.artistsspace.org/view_artist.php?aid=586
ARTNEWS.INFO
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personal website
http://www.space123.eu

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German 1908 as "Materie und Gedächtnis. Eine Abhandlung über die Beziehung zwischen Körper und Geist"), aktuelle Ausgabe: Materie u. Gedächtnis, Meiner-Verlag für Philosophie, Hamburg 1991.

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3 Paul Ricoeur. 1984. "Time and Narrative."
Translated by Kathleen McLaughlin and David Pellauer. The University of Chicago Press.

4 Merleau Ponty. 1964. "The Visible and The Invisible." Paris: Gallimard, also see Wikipedia.org on Merleau Ponty.

5 Richard Prince. 2006. *Spiritual America.* The Guggenheim Museum Publications.

6 Eric Sween: eric@boulder.net, www.narrativespace.com/sween.html.

American Vectors:
A Project Combining Biomaterials, Streaming Media and Military Imagery

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In *American Vectors*, I use the bacterium *Serratia marcescens* to represent airbases currently in use by the American military in Iraq. Images of these "micro airbases" are streamed over the Internet via multiple web cams on the *American Vectors* website so that viewers can follow the growth of the cultures over time. A blog component provides a forum for the discussion and interpretation of the work. In this, the first phase of the project, I have chosen to visualize six of the "enduring" airbases currently in use by the American military in Iraq. The "enduring" camps and airbases are permanent military installations in Iraq and they signify the intent of the US government to maintain a presence in the oil-rich country for the foreseeable future.[1] To visualize these bases, I am using cultures of the bacterium *Serratia marcescens* made with a printing technique derived from contemporary bioscience. The printing technique, a form of lithography, allows me to reproduce the bases as they appear from a satellite view, with the airstrips being the most recognizable feature. Over time the cultures grow, change and spread in unpredictable ways.

S. marcescens is a relatively harmless bacterium with a biosafety classification of level one: "not known to consistently cause disease in healthy adult humans."[2] It can be identified easily by the naked eye due to its deep red color. It is because of these characteristics, safety and visibility, that I have chosen to use it in many of my recent artworks.[3] The project re-presents the spectacle of the war in the manner of a scientific experiment. It combines the visual language of bioscience and the literary model of science fiction to envisage the physical infrastructure upon which the American-led coalition forces act as viewed from a satellite. The airbases and particularly the "enduring" airbases are of interest because they are the largest nodes in an infrastructure created to support the spread of power of transnational corporations through colonialist and neocolonialist mechanisms of control.

As an artist and amateur scientist, I am interested in using scientific processes in new ways: to create new and different meanings by deliberately embedding cultural meanings into the spectacle of science where they have only appeared accidentally or rather, unconsciously, in the past. Our history is littered with examples of the sciences, especially biological sciences, being used as metaphors to provide "explanations" for cultural forms. In many cases, new "sciences" were developed specifically to aid those who believed society could be as easily manipulated and engineered as any material. Social Darwinism and the pseudo sciences of eugenics and phrenology are just a few examples.[4] From this past, we have learned to view our science with a critical eye and question the research that produces our scientific knowledge as a general condition of scientific study. Though there are many exceptions to this rule, by and large, scientists have learned from their past mistakes and taken care to acknowledge the limits of their research and refrained from drawing too broad conclusions from their work. *American Vectors* is the latest piece in a body of work in which I actively use this conflation of science and culture to invert racist and cultural biases held by many Americans. It is an extension and appropriation of the original misreading of biological forms and processes, and an attempt to use the power of the biological metaphor to create a different vision of American culture and military conflict. This re-imaging of the Iraq war portrays American culture as many non-Americans view it: invasive, predatory, rapacious,

insidious, and exploitative. Thus, like biological entities such as viruses and biochemical materials, the infrastructure of war and globalization simultaneously perforates as it connects cultures. In *American Vectors* that infrastructure is presented as a living system with all its inherent unpredictability, growing, interacting and consuming all that surrounds it.

Transmission of these images over the Internet, along with a mechanism for feedback and exchange, is an attempt to re-ignite debate among Americans who are "fatigued" by the American mass media portrayal of war and by non-Americans whose perspective is most often absent from American media. The project welcomes, indeed encourages multiple readings, mis-readings and interpretations.

The airstrip at Baghdad International Airport (Log Base Seitz), Baghdad, Iraq.
Bacteria culture created with *Serratia marcescens* in a 4" round petri dish.

The airstrip at Balad Airbase (Camp Anaconda), Balad, Iraq.
Bacteria culture created with Serratia marcescens in a 4" round petri dish.

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1 Graham, Bradley. 2005. "Commanders Plan Eventual Consolidation of U.S. Bases in Iraq." In *The Washington Post*, May 22.

2 Richmond, Jonathan Y. et al. May 1999. *Biosafety in Microbiological and Biomedical Laboratories, 4th Edition*. Washington: U.S. Government Printing Office, p. 11.

3 Artist Steven Kurtz, founder of the collective Critical Art Ensemble, was charged with mail and wire fraud in 2004, for the acquisition of *S. marcescens* and other biological agents that he and his collaborators were using in their artwork. The charge of mail fraud was, in the eyes of many critics, an attempt to "save face" on the part of federal prosecutors who were forced to downgrade from their original charge of bio-terrorism in June 2004. Federal Judge Richard J. Arcara dismissed the case against Steven Kurtz on April 21, 2008.

4 In Phrenology, the bumps on a person's skull were interpreted as indicators of an individual's personality and their propensity for "evil" or "greatness."

Place @ Space

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Abstract

Every day, we transform our surrounding space into a proper place. We have our own ways to walk through the city and creatively reorganise our houses. Partly under the influence of new technologies, our environment grows in diversity, size and complexity. We cross borders more easily and make faraway, invisible or vanished places "tangible" through television or mobile phone. This, however, stands in tension with the intangibility of all sorts of technological networks in our environment. We are not always aware of the "controlling" power of surveillance cameras, RFID or data banks. It is in the field of tension between visible and invisible interferences, between actively and passively dealing with the environment where some developments within media art are situated. These projects take not only the man/technology/environment relationship as a point of departure of an artistic interference, but also as a goal. The work of art is a result of reflecting on the relationship mentioned above, but in turn it wants to intrude on the environment and "tactically" reassess the relationship between man, technology and living space. This they do, for example, by making invisible qualities of spaces visible, "writing" spaces or giving tools to people so they can create their place in space themselves. The often — literally — border and discipline transcending media works make a different, often more holistic approach to space possible.

The fields of tension between tangible and intangible, place and space and between disciplines serve as the source of inspiration for alternative field studies on "space". In this research we chose to combine methods in cultural and visual studies with artistic and design research to make possible a more holistic and material approach to the man/technology/environment relationship. The study takes shape in a tactile interface that reveals possibilities to develop a creative and enduring relationship with the hybrid environment.

Introduction

De Certeau (1988) teaches us that a 'space' is a 'place' as soon as someone can draw his or her patterns in it. Ubiquitous computing (technology is ubiquitous and present in everything around us) makes that more difficult because the space does not provide complete insight into it (Weiser 2000). Designers integrate technological networks into our spaces neatly and almost imperceptibly for our comfort. Yet, we do not want to be excluded from formulating our spaces. How does artistic research contribute to defining Man's place in the hybrid space?

Spaces in networks

The Actor Network Theory defines space through and between human and non-human actors (Akrich, Callon & Latour 2006). In this network media provides 'dis-place-ment' (Couldry 2004: 6). That's how hybrid spaces are formed. When a networked space feels natural, it becomes black-boxed (Couldry 2004: 1). Artists that explore the role of media, technology and science play a vital role in opening up those black boxes. By 'mapping' junctions (people and things) they can reveal properties of and moments of acts in spaces thereby stimulating 'agency' (the feeling of being able to act in a space) (Murray 1998). They indicate how we can use them via a tactical or self-devised logic (de Certeau 1988). We call these topologies because, more than cartographies, they permit networks between different contexts to be made visible and the physical perception of them to be examined (Flusser 1988: 177). This literally gives the rather abstract network more 'body'.

Hybrid bodies

Technology creeps under the skin of things and under our skin too. The things surrounding us are increasingly fused with traces that people leave behind (distributed objects), and vice-versa, we carry traces of the

technological networks that are interwoven with us (the concept of the cyborg, the distributed subject) (Joselit 2007). The resulting spaces are difficult to 'grasp', partly because we are permanently part of them. Duchamp's strategy was to handle the world like a readymade and to make it topsy-turvy from time to time. The theorist and critic Joselit argues for a similar approach to our increasingly technological and mediatized space: 'seize the world as a readymade and break open its circuits' (Joselit 2007: 171).

Hybrid viewpoints

Hybrid spaces require hybrid viewpoints. The ethnographic approach is best combined within social and cultural sciences with more material and hands-on approaches to the subject. Theories of daily life are better able to consider the body as part of the network and of the space (Galloway 2004). Some exact scientists explore the world in a very material and physical manner (Zielinski 2006). Within design research, 'performance ethnography' plays with the blurring of borders between 'inside' and 'outside'. In the arts, this performative approach to space exists too. Intervening in small things or participating as a physical link in a chain are modest approaches that don't profess to understand everything. Those that want to work in the knot have less inhibition and a greater chance of having an impact — even if very small — on the world.

Learning from the artistic approach in the knot

How can a society learn from these artistic topologies? These works of art act as a 'boundary object' (Nigten in Brickwood et al 2006: 126-129). It stimulates collaboration across sectors and disciplines. Outside the lab or museum context, in our daily space, it can also steer communication with 'the citizen'. Experimenting with interfaces that make it possible to share the knowledge about these methods and boundary objects with governments, art organisations, researchers and colleague artists can stimulate reflection on how we can stir the feeling of place, agency in a complex, hybrid space amongst citizens.

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Words to Avatars: Expressing Place in Cyberspace

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If we relate hardware, circuitry and wiring to the computer — a physical machine — then the Internet is superfluous, existing on the fringes of computer systems. The Internet itself is made up of electrical impulses, transmissions, and conceptual data. How does one convey the importance of one's physical place in fictitious cyberspace?

In 1996, Victoria Vesna addressed the emotional concerns of travel in cyberspace without a physical body, in her website entitled *Bodies, Inc*. Edouardo Kac utilized the Internet for soliciting a collective global effort from multiple physical locations to funnel nurturing light to a single plant in a darkened room — another physical location. That same year, Masaki Fujihata, in *Global Interior Project*, used a physical "Matrix-Cube" kinetic sculpture to map out the virtual space of his interactive program. Fujihata's more recent work utilizes Global Positioning Systems to document the character of a given place for storage and retrieval. Examining the character of a place, and analyzing the concept of experiential space via the virtual interconnected universe of the Internet, gives one an awareness of one's own unique geographic place.

Although characteristics of place vary from culture to culture, and are of global concern, the culture and characteristics of Japan have a uniqueness that brings about awareness in individual artists that become internationally active. I would like to ask whether or not there is a concern for retaining cultural characteristics in their work, and transferring cultural traditions of place through cyberspace?

Old media to new media — transferring place

Beyond Pages, an interactive work by Masaki Fujihata that developed out of a thematic exhibition concerning the future of the book, tried to predict how digital technology would change the nature of how we interact with text and images in the future. Rather than turning pages, we click on images; rather than moving through a narrative in a linear fashion, we interact through tree-like branches, receiving responses to our individual choices. Images and text come alive before our eyes.

The word "media" used to mean "books" or the printed word in newspapers or magazines, which were disseminated to the public to inform people of recent events. Japan now has assimilated the term "New Media" for digital and electronic art, a by-product of the "information society." In 1998, the NTT InterCommunication Center held an exhibition entitled *The Library of Babel*. The concept behind this thematic exhibition was based upon the idea of the library, or place where media is housed, as a metaphor for the universe. In Masaya Takeda's article "The Marvelous Story of A Book from the Sky" in the exhibition catalog, the book from the sky was the illegible piece of literature dropped from heaven in an indecipherable attempt from the gods to communicate to humankind.[1] Explained by Takeda, Chinese (kanji) characters have three essential elements: a physical form, a phonetic, and a meaning. Those characters that have lost the phonetic and meaning, but have survived in physical form, are useless to us today, similar to the fabricated nonsense characters found in Xu Bing's infamous work entitled *A Book from the Sky* of 1991 installed in the ICC exhibition. Masao Komura, one of the digital pioneers of the 1960s CTG group in Japan, was also an artist/participant in the show with his *Non-Word Dictionary*. Komura used the computer to place random characters together into nonsensical words. Pages and pages of words were organized into bound volumes and set like an encyclopedia on a shelf. The title of the whole exhibition used the biblical concept of Babel, in which the Lord intercedes in humankind's deliberate attempt to build a tower to the heavens by mixing their languages so that the people involved in the task could no longer understand one another. Without the ability to communicate, people could not work together, and therefore, the task could not be completed. The biblical story of Babel is related to the philosophical undercurrent that word is a concept equated with divine forces. "Word" existed before the written text, and in the biblical use of the term, there is more to "Word"

than a practical tool for communication. In the New Testament, the evangelist John wrote "In the beginning was the Word, and the Word was with God, and the Word was God."[2] John equates the "Word" with God. The Word is a concept before it takes form as written text. In the original Chinese language interpretation of the New Testament John 1:1 was translated as, "In the beginning was the Dao." What better way to translate the conceptual meaning of the "Word" in the Bible?[3]

Although Donna Cox has used the Daoist concept of oneness " [...] as a metaphor for the interrelatedness of electronic-mediated societies,"[4] here I use the Dao as a metaphor for the complex layering and enfolding of pathways in computer database systems and algorithmic processes. The conceptual nature of electronic media, and its potential for the artist, is complex indeed, and is changing the way we perceive and create. It is also changing our perception of the concept of "Word". Just as words, and sometimes images, could be used to convey the concept of place in the old media of printed books (when legible of course), a combination of words, images, sounds and motion can now be used to convey the character of place via New Media.

Changing perceptions of place

The ICC InterCommunication Center in Tokyo held its *Art Meets Media* retrospective show of Media Art in 2005 in which Alexej Shulgin compared Software Art to Concept Art. Explaining that Software, or computer programming is the "flesh" of digital media, even as the intangible substance of the World Wide Web is " [...] probably, the most undefined, ungraspable and ephemeral art form ever existed."[5] This new way of exploring art concepts, through software and globally through the Internet, has impressed a younger generation of artists in a way that has promised a whole new direction for the art world — no longer centered in New York City or Paris. Place is neither here nor there, it can be past or future.

Mariko Mori is an example of one artist from Japan enlightened to her culture's uniqueness through her own foreign experiences. She grew up in Japan, became a model at the age of sixteen, studied fashion design at a standard women's two-year college; left Japan to study art in London (Byam Shaw School of Art and Chelsea College of Art), then studied at the Whitney Museum of American Art in New York City. Her experience in the multicultural environment of New York heightened her awareness of the uniqueness of Japan's spiritual culture, and this had a great impact on the content of her work.[6] Parallels can be seen between Mori's digitally manipulated photographs of herself in costume and context and those of Yasumasa Morimura. The big difference between the artwork of the two artists is that Mori parodies the place of the future while Morimura's work is a play on the past. Morimura dons costume to pose as the main characters in historically significant works of art like Manet's *Olympia*, and to mimic past celebrities like Madonna and Michael Jackson. Mariko Mori, however, becomes a futuristic Cyborg tea server (in Tokyo), or a yet unknown pop star.

Mori expresses her own awareness of the value that diversity brings to a place. Typically, however, fans of Japanese art and culture look for superficial influences in contemporary art like stereotypical motifs of Japanese icons, i.e. Mt. Fuji and Geisha, but the more interesting and profound cultural influences are perhaps found in an individual's way of thinking or responding to the physical and spiritual environment.

Documenting the character of place

Masaki Fujihata has recently worked with Geographically Based Profiles using GPS Technology to gather together fragments of character from an existing social body spread over a specific region via randomly conducted interviews, then stitched together in a framework according to their intersections in time and space. For the first project in this series, the visual data was collected

during a hiking trip by approximately 120 people along the coast of the island of Mersea near Essex, England. Using their digital cameras, individuals in each group would record conversations and activities. The location of each digital recording was noted using a GPS locating system. Afterward, the digital images and video clips were gathered along a timeline. Each visual recording is marked by a still image along the line. As the viewer follows the line through the CAVE application, and comes to a screen, the viewer may activate the screen to view the clip. Some of Fujihata's Geographically Based Profiles are conducted in Japan. The purpose of these visual databases, however, is to record the nonlinear character of a unique place, no matter where the place is physically located. I suppose this particular project can be placed in the hands of anyone, at any physical location, to record and convey the character of that place and its unique inhabitants regardless of their cultural origins or ideological persuasions. The character of a place is made up of a community of individuals. Fujihata's Geographically Based Profiles are like video polls, a random sampling of the ideas, perceptions and preferences of the people in a given area. Such is the complexity, or simplicity of location. Fujihata makes a concerted effort to preserve the character of a unique place, and that is what his current art is about.

Some artists consciously incorporate a sense of place in their work, and others subconsciously search for a physical outlet for their conceptual work. From the user's perspective, it often remains a mystery. The variations on the exploration of place in cyberspace are seemingly endless.

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2 *The Holy Bible*, New International Version (The International Bible Society, 1973, 1978, 1984).

3 太 初 有 道 ， 道 与 神 同 在 ， 道 就 是 神 。 这 道 太 初 与 神 同 在 。Chinese Union Version Bible (Bible Gateway, Onlines Bibles) Public Domain. http://www.biblegateway.com/versions/index.php?action=getVersionInfo&vid=80#copy

4 Cox, Donna. 1989. "The Tao of Postmodernism: Computer Art, Scientific Visualization and Other Paradoxes." In *Leonardo, Computer Art in Context, Supplemental Issue*, p. 7.

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Cramming Aesthetics, Art Appreciation & Education into a Fun Museum Experience

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The Indianapolis Museum of Art's Education Division was presented with a unique and challenging opportunity by the museum's director: create an engaging, fun, innovative summer exhibition, combining art and nature. A team of educators accepted this challenge and the exhibition, *Nature Holds My Camera: The Video Art of Sam Easterson (NHMC)*, was born. Working closely with the artist[1], the team assembled and began planning the project.

The team innovated the typical approach to exhibition development and created a model that ultimately led to the project's success. The creative and collaborative organizational approach emerged from several factors — IMA had less than a year to create an exhibition from scratch, a limited budget, and in early stages of planning, limited institutional support from fellow IMA departments. Conversely, *NHMC* gave Education staff the opportunity to conceive, curate and manage an exhibition an opportunity almost always exclusive to the curatorial department. So, we all had something to prove.

In some ways, *NHMC* had to adhere to the traditional planning process. This included a cross-departmental, institutional-wide exhibition team that would meet on a regular basis. Although this process typically works well, it did not immediately apply to the development of *NHMC*. Early meetings were met with little enthusiasm. The success of the project relied heavily on the support of all internal departments and with little time to create this exhibition, the Education team initially faced apprehension, opposition and hesitation from colleagues that were already focusing time and resources on other projects. Outside the traditional exhibition framework, educators began campaigning for *NHMC* by meeting with individual members of departments to sell the concept. This approach built support and ownership from essential IMA staff. In turn, these individuals became advocates for the exhibition. As the community of supporters grew, so did our strength as an exhibition team. The traditional exhibition meetings now ran smoothly and new ideas or challenges were met with a positive response.

In previous exhibitions at the IMA, exhibition designers and graphic designers worked separately in their areas. In the case of *NHMC*, both the exhibition and graphic designers worked hand-in-hand to create the physical exhibition space and more. The outcome of this collaboration transcended good design. It allowed the team to thread the design into all areas of the exhibition process including the activity guide, web site,[2] behind-the-scenes videos, and merchandising. This concept is not new to the exhibition process, but at the IMA, it was the first time that the design and graphic departments had collaborated in this manner from the very beginning. The goal for *NHMC* was to create an engaging visitor experience, but to also redefine areas of the exhibition development process. The planning of this exhibition resulted in opportunities for the staff involved to contribute more meaningfully and feel a sense of pride in that work. In essence, the Education Division both challenged and empowered colleagues to rise to the occasion, but most dramatically, affected the institutional approach to the exhibition process and resulted in a successful and engaging exhibition.

As with many effective exhibitions, the organization of themes in *NHMC* was central to its success. The show was divided thematically through a video review process led by IMA educators. Easterson's body of work was reviewed with an emphasis on emerging themes. Rather than impose a curatorial point of view, they opted to allow the work to reveal common threads that later developed into the exhibition outline. The themes became the narrative elements of the exhibition.

The Visual Thinking Strategies (VTS) developed by Abigail Housen and Philip Yenawine[3] informed the

progression of content in *NHMC*. VTS is an inquiry based process of investigating and better understanding art. Informed by these ideas, it made the most sense to offer visitors an increasingly complex experience, creating opportunities for success and aesthetic growth by introducing relevant and appropriately challenging ideas throughout the exhibition by strategically sequencing the video works.

At the entrance of the exhibition, visitors first encountered a video loop featuring an armadillo. This video was selected for the entry because of its popularity among viewers and its fun, light-hearted spirit. The work and its placement at the gallery entrance was an invitation to laugh, explore and consider a new point of view.

After entering the gallery, visitors were surrounded by larger-than-life projections in a long, dark room. Four projections alternated allowing each work the space and time to be enjoyed with its audio, without being diluted by multiple projections running over one another. This room contained two themes, the first was "In Motion" which, as the name implies, provided a variety of animal and insect perspectives on the world in motion. Next was, "Taking Action." This section challenged visitors to move from passively watching to actively thinking. Here, the videos illustrated a variety of provocations. Instead of walking in to a scene already in action, they would see a creature at rest and be offered the opportunity to investigate the stimuli that created motion.

It should also be noted that this space was meant to be fun: outfitted with comfortable bean bag chairs that created a familiar, unassuming environment where visitors, particularly families, found it easy to spend much longer periods of time than in more traditional gallery spaces.

The next thematic area featured a more aesthetic topic with a creative twist; "Reflections and Shadows." Here, viewers were confronted with a large mirror opposite the video projection, adding their own reflection to video that included animals encountering their reflections or shadows in nature. Not only could visitors observe these visual elements, but if desired, they could further consider the effect of light in the works through a simple prompt on the wall: *"Have you ever played with light?"* Similar prompts that provided a chance for both fun and learning were placed throughout the exhibition.

A unique opportunity followed this room. Visitors would find their way to a video in the "Storytellers" area that was produced in collaboration with Easterson and offered his audio commentary over two contrasting video loops featuring sheep. One was from a very early project and the second from a much more recent one. The two works juxtaposed, provided viewers with a glimpse into the lessons he learned as an artist, and a human being, about art and nature.

Next, visitors found a new challenge based on perspective. A large projection featured a cricket, spider and scorpion and on a small monitor were grand landscape views often seen by birds. The artist offered this unique display as a way to overturn the inequity in these two views, giving the detailed perspectives the hierarchical upper hand.

The final indoor space offered visitors a chance to interact in a much more tangible way. Throughout the exhibition wall graphics posed questions, declared ideas and provided images of animals, plants and insects that related to the videos being screened in each room. A printed exhibition guide offered visitors an opportunity to take it a step further and respond to more directed questions and activities. In the final exhibition space visitors could engage each other and the artist through live, in-gallery blogging.[4] Three computer workstations provided viewers prompts to respond to different elements of the exhibition and ask questions of the artist. Easterson responded to dozens of questions throughout the run of the exhibition, engaging in debates about the authenticity of his work, his point of view and fielding requests for new animal cams of every variety. It was this interactive component that most greatly contributed to a growth of community.

The final and perhaps most notable aspect of this exhibition project was the inclusion of site-specific video work featuring the Eastern Mole, an animal living on IMA property. In order to provide visitors a truly immersive experience with nature, Easterson devised the outdoor video transmission system that would allow viewers to see recorded footage in IMA's Art and Nature Park[5] on a handheld video receiver. IMA exhibition organizers responded to his inclusion of this element by developing an Art and Nature Pack that included art supplies, binoculars, magnifiers, a compass and other tools that would support the investigation of art and the natural world.

The result of all of these components was a rare look into the world of plants and animals outside of the human experience, an opportunity to step outside of ourselves and consider a range of perspectives. Easterson's work was the foundation of *NHMC* but also the most questionable element for many. While a certain group of viewers were delighted by the approachable content, more experienced art viewers found the content to lack depth, or expertise. The notion that a person could put a camera on an animal and call the resulting video art was not accepted by all. This conflict is one that Easterson experiences as widely. At IMA, we decided not to make a determination, but instead put the work up, offer a variety of points of view and let viewers make up their own mind. The visitor blog would indicate that they reached a variety of opinions, but this still did not satisfy all of our critics. In the end, though, we were satisfied, because we achieved all of the goals we set out to meet. We offered an exhibition that was fun, complex, challenging, inviting and a totally outside of IMA's typical approach.

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1 Sam Easterson was selected as the featured artist after review of his works that can be viewed at http://www.eco-sensing.com

2 www.natureholdsmycamera.com

3 www.vue.org

4 http://www.natureholdsmycamera.com/blog.php

5 Find out more about the Virginia B. Fairbanks Art and Nature Park: http://www.imamuseum.org/explore/naturepark

Quantum Uncertainty: Fragmentation in Art, Life & Reality

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> "The third dimension is but a shadow cast by the fourth."
>
> – Marcel Duchamp

Introduction

In this paper I wish to explore the philosophical implications and metaphorical relationships between quantum theory and art. Few theorists have attempted to broach this subject and at first glance, arcane equations and subatomic debris appear to have little relevance to visual art. But if art is a creative endeavour that reflects human experience and understanding of the universe, then if that understanding changes, so too must the art we create. Art today largely remains a reflection or meditation on a concrete, classical understanding of the universe. Almost everything ever painted, sculptured or drawn is solid, continuous, structured and knowable. But at its smallest units the universe is fragmented, random and uncertain. I wish to examine the impact of this on today's electronic culture and draw parallels with the increasingly fragmented lives we live… and its implications on the art we create.

Looking back: The Renaissance

To understand the future we need to look to the past. The Renaissance was a time when changes swept the Western world, initiated by things that at the time seemed relatively insignificant. Just as perspective had far-reaching consequences that no one at the time could have imagined, it's very likely that developments in quantum physics will also create more significant changes than we can currently imagine. We all know today that a painting presents only two dimensions, the physical universe is three dimensional. But 500 years ago no one really understood that. Paintings and drawings were two dimensional. They were flat and linear without the illusory appearance of depth. The discovery of perspective, or the third dimension, profoundly changed the way people saw themselves, the universe, their place in it and the way they made art. The addition of the third dimension, the change in the perception of space, was of great significance. The result of this was that flat, linear art was replaced by paintings, drawings and architecture that exploited a third dimension. Today we may be on the brink of a similar new era of perception. The shift in the Renaissance was due to the invention of perspective. Today, this new shift originates from the revolution in physics started by Einstein and continued by Bohr, Planck and others.

Quantum uncertainty

In 1900 German physicist Max Planck put forward a hypothesis that light and all wave elements were discharged in packets or 'quanta'. In the same direct line of development came the work of Werner Heisenberg, who in 1927 explored the idea that in order to predict the future velocity or position of a particle or wave, you have to measure its present position and speed accurately. Essentially, Heisenberg found that in the act of measurement the device used for measuring was incorporated into the object being measured. Heisenberg demonstrated that the uncertainty in the position of the particle, times the uncertainty of the speed, times the mass of the particle can never be less than a specific amount. This amount is known as Planck's constant.

The Heisenberg Uncertainty principle established that the behavior of the universe is fundamentally random. In other words, Quantum Uncertainty is a property of the world — that is it is impossible to measure the position of a particle with better precision than offered by quantum mechanics. And if you cannot be sure where an electron is or where it's going then you cannot be sure what a complex system like a human being will do. God may have created laws to control the universe but he does not control the detail. There are laws in which the universe operates but events unfold within those rules. In many ways, this model of understanding will reflect a new model for electronic art: an art of possibilities, where artists can set up an overriding framework within which things will be dynamic and empowered to move and change. One of the interpretations of quantum theory is that until a state of matter is observed, it exists in many

states simultaneously, that is, it exists as a "probability wave" that contains all of the possible states of that matter. In many ways, art is also more like a "probability wave" that is fragmented and uncertain in its position.

A new worldview: Multidimensionality

> "I think the implicate order implies a multidimensional view, in that we have a vast dimensionality, a much richer sort of reality… I think in art the multidimensional order first appeared clearly with Impressionism, and then on from Cubism."
>
> – David Bohm

While the Renaissance was a rebirth based on the invention of perspective and the realization of three dimensions in art, I believe there is now an emerging worldview based on an understanding that the universe is multidimensional. Present-day science assumes a universe that demonstrably exists in multiple dimensions. It is not surprising that in the early days of Quantum Physics, only a few artists allowed their intuition to roam this multi-dimensional universe of space and time. Among these were Marcel Duchamp, who had perhaps the strongest artistic insight into the visions offered by quantum mechanics. Marcel Duchamp said it all in the 1930s: "The third dimension is but a shadow cast by the fourth." Certainly his works *The Bride Stripped Bare by her Bachelors* and *Nude Descending a Staircase* anticipated many of the foresights of quantum mechanics. In this composition, Duchamp depicted motion by successive superimposed images, similar to stroboscopic motion photography. The painting shows elements of both the Cubist and Futurist styles and the figure almost exists as a 'wave of possibilities'. Duchamp also recognized the influence of stop-motion photography. The work created much controversy at the time and was parodied for years but in many ways it was also very prophetic.

Conclusions

Quantum theory presents a radically different view of the universe than classical science, and it is no surprise to find that many thinkers on consciousness have sought to relate consciousness to quantum theory. Marcel Duchamp suggested that the 'normal' world as we see it is some kind of shadow existence, like a projection on a flat surface of solid things in the real world. By amending the flawed epistemology that we inherited from the late Renaissance, which assumed a deterministic and rational universe, we can perceive this real world that is fragmented and uncertain. With the insights provided by Planck, Einstein, Heisenberg, etc, we are able to construct an epistemology which permits us to know that new ideas of space and time are legitimate aspects of the world we can see and can impact the way we think about art.

The conclusion here does not yet constitute a theory or a completely coherent system of logic. Rather, this collection of ideas and artworks is like quantum mechanics in the early 20th century, not a theory — but a collection of new and fragmented observations. My goal is to continue to build a body of work suitable for provoking an open and lively discussion of ideas to pull this intellectual sled forward. We are now entering a truly post-postmodern time and it is my opinion that art will continue to evolve towards a reflection of a multidimensional viewpoint.

Pudu Jail's Graffiti:
Aesthetics Beyond the Walls of the Prison Cells

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Pudu Jail's Graffiti was a physical art lost during the course of reconstruction of the Prison into a remand facility in 2003, as these photographs were the last remembrance of the graffiti found prior to the construction, these images are the last remnant of the markings that now no longer exist as a result of the reconstructions.

By connecting the idea of graffiti (*writings*) being a source of information, composed within a simple agreement, there was deliverance. This was not a matter on figuring out how we know and what we know, but also how the fundamental information that was embedded into these *writings* leads to a release from the bars of physical imprisonment. In other words, Pudu Jail's graffiti does not simply refer to memory, but also show proof of acts to find sanctuary, or even salvation, which even steel bars and concrete walls could not deter.

Based on the information in most of the data collected from the *writings*, it was possible to find similarities in the collective conscience of the prisoners based on the structural basis of the individuals' origins, as the prisoners were predominantly kept in high volumes and density, yet segmented by ethnicity within restricted confinements. The prison was ruled with repressive sanctions of the Penal law system. These would bring about, hypothetically, the attachment of "higher" and "supreme" values (Foucault 2003: 366-371), as the prisoners were highly secular.

Arguably, almost all of these *writings* documented were reasonably independent to stand as unique character(s) on their own, taxonomically. The very concept of an individual being deprived by powerful institutions and laws from society rooted more from ancient and modern psychology than from traditional doctrines. In many ways, the characters of the prisoners are much closer to the likeness of the men confined in Plato's cave,[1] rather than just a simple confinement. Hence, so do their voices in those *writings*. It was observed that the writings were neither premeditated nor simulated. The *writings* perhaps were actually composed of subject matters that had references to the subjects and objects around this region, and this prompts the question: what drives the prisoners to project these *writings*? One of the basic themes of the Prisoner's *writings* was psychological skepticism that questions the nature of reality and whether this documentation could actually be on familiar terms with, or even acknowledged. This theme is played out in the conflict of "*bricolage*"[2] world where prisoners are struggling to survive in a conflict against their composure in such environment and compose them into a "simulated" literature within the *writings*.

The quest for adjacent representation of the space makes one feel, smell, taste and see electrical signals interpreted by the experiences of the brain. Yet, these *writings* remain intact in its form and appearance as feasible documentation went through. The particular reason of the writings within the confinements of the Pudu prison facility portrayed real substitution for the existing environment.

R. Barthes, (1915-1980)[3] suggested *semiology*[4] as a great exponent from the concentration on text, rather than the author, as an object of his study. He had written vast amount of *writings* that are found in commonplace, events, images, and activities (usually found in most mechanized texts; i.e. billboards, posters… etc.). However, a more consistent explanation would be that the *writings* were considered as simulation and this study hopes to add a branch towards the existing graffiti's taxonomy. "Pudu Jail's Graffiti: Aesthetics Beyond the Prison Cell" has enough evidence to document the *writings*' unique purposes. The *writings* depict the committed space, as other than their cellmates, they were dependent upon the walls as their only audience. The notion is that the walls will preserve their words and past memories. Channeling onto inanimate objects resulted in further salvation — and the *writings* could allow those leaving their markings behind on the prison walls to gradually improve their levels of hope over despair.

In other words, if we chose to read the texts (mainly printed texts) merely for reasons of leisure only, then we really don't have any firm basis upon which we can conclude that any proprietor of the texts must be telling the viewers an absolute perspective. The entire population, as Barthes mentioned:

> The removal of the Author… is not merely an historical fact or an act of writing; it utterly transforms the modern text. The temporality is different. The Author, when believed in, is always conceived of as the past of his own book: book and author stand automatically on a single line divided into a before and an after.
>
> – Robert, B., 1977[5]

However, the attraction of radical skepticism would be powerful, being drawn to the scene in the Pudu Prison facility where the walls around the cell room frame are closely tied to the walls themselves. Beneath the thick layers of plasters on each wall, each *writings* contained more subtle hints of more *writings* that might have existed prior to the current ones. This merely holds up the notion of "A world within worlds within words".

The "Pudu Jail's Graffiti" has the sole aim of future extraction of linguistics in analytical concepts, and this documentation hopes to start semiological research in this direction. In assembling them, the taxonomy was not presupposed to remain integral to future research; nor does this semiology suggest a permanent linguistic model. The researcher merely hopes that it may enable an initial (albeit provisional) order to introduce the heterogeneous mass as significant graffiti, and it will go through various stages of evolution. In fact, what the researcher purports to do was to furnish a principle of classification with the hope that such documentation will manage to contain enough information to prevent the *writings* from being eradicated (*Damnatio Memoriae*).[6]

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1 Plato's "Allegorical Cave", from Plato's *REPUBLIC*, Book VII, 514a-c to 521a-e.

2 Bricolage n. – the process of transforming the meaning of objects and symbols, through novel uses or unconventional arrangements of unrelated things. *Collins Dictionary.* 1997.

3 "*Mythologies*" Barthes: 1975 p.107.

4 Semiology derives from the work of the Swiss linguist Ferdinand de Saussure. Saussure's linguistic theory as elaborated in Cours de linguistique générale, derived from the collection of lectures written between 1906 and 1911.

5 Robert, B.'s lecture (1977), "Death of an Author"; Written by Wyrick, D.- http://social.chass.ncsu.edu/wyrick/debclass/whatis.htm, accessed December2004`.

6 In ancient Rome, the senate wiped its disposed emperors from the historical records by a decree "Damnatio memoriae" (Condemnation of memory), by removing their names from public inscriptions and destroying their statues. From the late 1st century BC until the 4th century AD, the recycling and destruction of images of emperors, empresses and other members of the imperial family occurred on a vast scale and often marked periods of violent political transition. This volume catalogues and interprets the sculptural, glyptic, numismatic and epigraphic evidence for damnatio memoriae, revealing it to be at the core of Roman cultural identity. 552p, (Monumenta Graca et Romana 10, Brill June 2004)

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The Neighborhood Narratives Project: An Exploration of New Media Technologies

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"when you go back to Sicily
visit my home in Borgetto
it would be my pride and joy
go, embrace my mother for me

I was born in that house
All my feelings are there
All my memories are of that place
And our little piece of land –
My brother will take you to see it
We have vineyards and orange groves. . .

My mother will give you
A jar of our best olives
We'll share it back in America
We'll have a lot to talk about. . ."

From the poem, "What Pasquale wrote me. . ."
In ***Vanzetti's Fishcart*** by Justin Vitiello

Place, according to Yi Fu Tuan (1977) combines a sense of position within society and a sense of identity with a spatial location. As in Pasquale's lament, places have historically been viewed as physical sites, with natural and emotional endowments that speak to the limits of human freedom. New media technologies provide an additional prism from which to view place.

In one way of thinking, place does not have a particular geographical scale; anywhere and everywhere, it results from 'fields of care' and emotional investments. According to Tuan (1977), space is formless and profane except for the sites that stand out because spirits are believed to dwell in them — *spiritual, sacred places*. Natural endowments (climate, topography, etc) modified by successive generations of human activity give a place *personality*. *Sense of place* is borne out of the senses – seeing, hearing, smelling, touching, and tasting. By this way of thinking, neighborhoods are places. They are sacred and hold the stories of spirits, they have personality, and they are experienced by the senses.

Both the old and new technologies of communication strive to capture this emotive, phenomenological conception of place. But for persons interested in new media, places/neighborhoods are more than the nostalgia and longing that Pasquale has for his Borghetto. They are infinitely more complex. The neighborhoods created by new media rely not as much on experience and physical proximity as on the social experience of being connected in a virtual sense. Media artists create a new form of information narrative — one that relies on data to describe the world we live in. The primal, nostalgic sites of longing and loss are overlain with the dialectics of experience, culture, politics, and economics but they are also overlain with a story provided by data from new media. Accordingly, contemporary places are assemblages of technology that rest on a foundation of the past and the present at the same time. It is this simultaneity of locatedness that fascinates and challenges media artists and persons interested in these new technologies.

Despite their seeming simplicity; location, place, and neighborhood (both physical and virtual) are typically thought of as departure points or neutral containers for whatever is built upon them. The technological method of reference via new media is a departure from the experiential method of reference via humanism. Accordingly, any account of location, place, and neighborhood is grounded and tied to a particular disciplinary foundation. All provide a framework in which the analytic and descriptive use of spatial and topological notions can be guided and better understood.

Place, space, and location as situated sites constitute and are constituted by the stories people tell. Neighborhoods

yield themselves to the interpretations and readings of the individuals who traverse them. They are always contested and annotated. What we see is but one layer.

Location aware media technologies raise many concerns about the significance of these privileged concepts like place, space, and location. Unlike other media, particularly visual media such as film, photography, television, etc. which claim to offer a lens through which we can interpret and understand social life; new location aware media make it possible to attach invisible notes to spaces, place, people and neighborhoods. While it does not necessarily produce the placelessness or location neutrality that many claim, it derives its sense of purpose by enveloping the viewer/user and demanding active participation in unearthing the layers of social life that occupy a space and reveal the complex historical, cultural, socio-political and economic contexts that affect location specific interactions.

In this paper we discuss the Neighborhood Narrative (NN) project and its contribution to understanding the problematics around location. Although the new media technologies do not capture the spirit, personality and sense of place of Vietiello's Pasquale, the new media technologies confer on places and spaces a data narrative and a scientific reflection of the world. They unearth a Foucaultian-like archaeology of place, space, and location and rather than merely "following the contours of location specific variables" they instead offer a 'narrative' path to understanding the philosophical and psychosocial aspects of public/private, physical and mediated, local/global relations. Tuters and Varnelis claim the new media technologies have the potential to re-configure everyday life by overlaying a second virtual world over the physical one.

In NN, the urban landscape is a canvas where analogue and digital media, text, sound, and image are applied to real places in order to document the defineable aspects of places that make up their essence and trigger authentic engagement. The goal is to create a set of site specific annotations; such as sound maps, community histories augmented by web sites, audio interviews authored and distributed over the cell phone, site-specific installations that integrate radio and other communications technology, scavenger hunts along with many other types of combinations that when connected would produce a neighborhood narrative. This varied system of urban annotation closely tracks the everyday life of the city. The process encourages participants to combine the skills of the storyteller, the grounded narration by imagination, with the mobile observer of the city who brings a broad overview. Thus NN explores key technologies, ideas, applications, poetics, and humanisms that are shaping the emerging geoweb of spaces and places, and the locational specificities that inform and shape them now and in the future.

Unlike the "sociological, anthropological, political, economic, or cultural perspectives, the new media "deploy spatial and topological notions" to question and demystify discourses of knowledge and power. These new media not so much maintain our connection with a lost place through particulars but they bring the lost place into co-existence with the present. More importantly, they create experiences that defy traditional notions of past, present, or future, and instead embrace the possibility of being in more than one place at the same time or the possibility of different places being experienced in one location. Thus Pasquale's Borghetto is not a place that no longer exists, it may also be an experience that no longer exists.

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Blurring Boundaries Between the Real and the Virtual — About the Synthesis of Digital Image and Physical Surface

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The subject of this paper emerges from my ongoing experimental work and research as a textile designer working with digital media. My investigation focuses on conditions that lead to the synthesis of digital imagery and physical surface, to the fusion of digital display and materiality. I am interested in visual ambiguities and illusions resulting from this synthesis. I explore how such phenomena can be used to create visual experiences playing with our perception and evoking the confusion and interference of the real and the virtual.

The paper explains the progress of my research and its outcomes against the contextual background of recent developments in digital display technology and of the renaissance of materiality and ornament in Western aesthetic. It discusses the method of applying projections onto printed surfaces and materials to generate overlapping realities and hybrid environments. The text concludes with a perspective on further research.

Context

After a period in the '90s, where we seemed to marginalise the physical in favour of the digital, interest has returned to materiality as a tangible and bodily encounter. This is most apparent in the visualisation of digital images and data, where the quest of introducing tactility and multi-sensory experiences is rising. Innovative concepts and schemes for alternative forms of digital displays are constantly evolving combining technology with various materials and surfaces. Due to these innovations the digital image becomes seamlessly interwoven in our environment — an omnipresence of multiple realities we are less and less aware of.

This development is strongly influenced and driven by a changed attitude towards the aesthetic in Western culture. Today we can observe an increasing desire for enhancing the seductive, the playful, the ornamental and the illusionary in our environment, provoked by the progress of globalisation and digitisation. Boundaries are blurred and distinctions obscured. With the words of architect Robert Venturi, there are "elements which are hybrid rather than 'pure', compromising rather than 'clean', distorted rather than 'straightforward', ambiguous rather than 'articulated', … inconsistent and equivocal rather than 'direct and clear'". [1]

The trend of emphasising the seductive and the decorative reflects particularly in architecture and interior design. Converging more and more with clothing and fashion, architecture today addresses our emotions through aspects such as softness and fast-changing looks. Materiality and visual appearance have become crucial. Through the use of digital media physical edges become softened, surfaces become mutable and hybrid influencing the shape of buildings — to the extent of visual disintegration of spaces and walls.

Examples of realised projects present solutions that not solely function as a display of information, rather serve as a decorative element addressing our senses and imagination. Thereby the character of the display is mainly defined by the interplay between light and material, as digital data and images are usually visualised through light. Light reveals a material's optical qualities and can make a surface appear seductive and appealing, whereas the nature of the surface can significantly determine the displayed image.

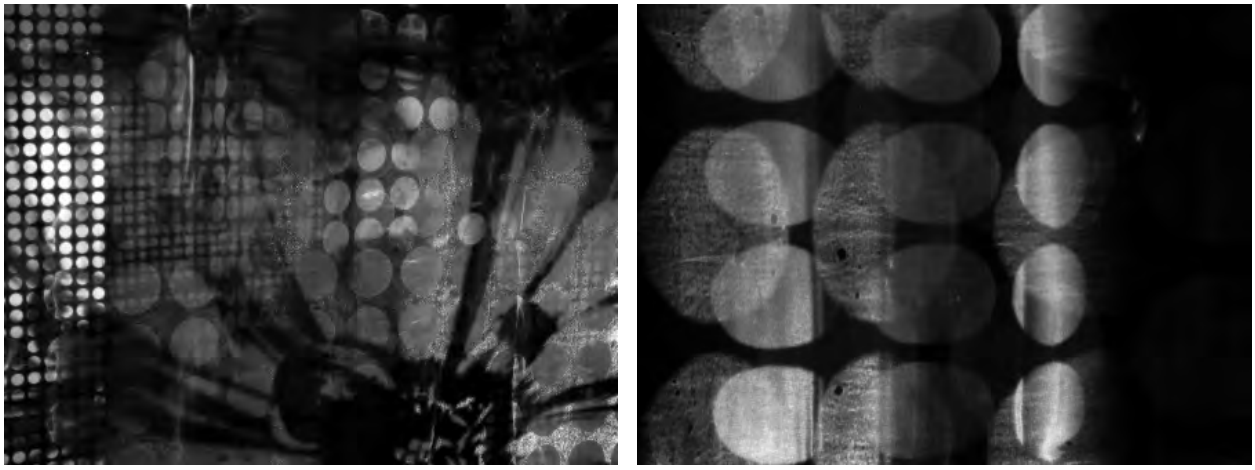
Research

Against this background, my own creative practise and research develops as part of the process. Applying digital media technology within the context of surface design, spatial design and performing arts, I appreciate the endless possibilities for visual experimentation. At the same time, I miss sensory and tangible experiences within the digital and therefore have been aiming to combine both worlds ever since — an aim that led me to work with light and projections. Images composed by light such as projections, reflections or shadows — although they are a physical fact — are of an ephemeral and elusive existence, an existence between real and virtual. They imply ambiguity and illusion, an aspect I found increasingly interesting.

I started to experiment with projections by superimposing patterns and images onto the human body, exploring the impact of the projection onto the appearance of the human figure. The result was as intriguing as the method was simple, and it was captivating to observe the fusion of the two visual entities. The projected image created something like a virtual imprint on the skin — looking deceivingly real, but existing only temporary, leaving no trace.

the layers catches the projected image separately. The surface expands into space. Thereby the intensity of the illusion depends on the superimposed image as well as on the surface quality; for example with mirroring material the deception is amplified.

On surfaces modified through screen-printing, the light interacts differently with the material and the pigment, as they are of visually contrasting qualities such as reflective/non-reflecting or transparent/opaque



Overlapping realities — experimenting with projections onto printed foils and fabrics

In the process of my research into the fusion of the digital and the physical, my investigation focused more and more on exploring visual ambiguities that result from the interference of the real and the virtual. I became interested in how the overlap of realities influences our visual perception of space and can deceive our vision. In this context, projection became a method of exploration for me.

In my most recent series of experiments, I projected sequences of digitally animated patterns onto surfaces of varying optical qualities, modified through layering and printing. Multiple layers of transparent or semi-transparent material instantly generate an effect of three-dimensionality, when projecting onto, as each of

— resulting in intriguing illusionary effects. The printed areas change the display of the projected image alternating between visible and non-visible sections — 'cutting' it in several parts. As a result, the projected and the printed image merge in such a way that it becomes difficult to distinguish between the print and the projection, between the real and the virtual.

As an outcome of my ongoing research, a spatial installation titled *Blurred Boundaries* was developed and recently exhibited in my university. The installation consisted of a multilayered composition of differing surfaces, partly printed, and multiple projections. The viewer was invited to move around and observe the play of light and colour on the surface, unveiling a series of

visual surprises created by the interaction and synthesis between projection and material. With this installation, an ambiguous, mutable and hybrid environment was generated, where physical and illusionary space was experienced as an entity. The digital image was transformed into a tangible and tactile experience.

Resulting from my investigation into the real and the virtual, a collaborative project with choreographers and dancers emerged, where projections were applied on the performers and sheer textile panels.[2] During this experimental workshop, we explored the relationship between body, digital image and space looking into the construction of space and the illusion of movement and stillness. The performers moved in and out of the projected pattern playing with the different worlds — becoming an element of the technology or staying separate from it.

Perspectives

Within my extended research, I continue to elaborate and develop the relationship between surface and digital display/image in conjunction with light as the mediator between the both. This involves looking into emerging display technologies such as Organic Light Emitting Diode/Display (OLED — made of organic polymer substance), as well as into methods of further manipulating the projection surfaces. The later includes the use of light-responsive substances, for example phosphorescent or photochromic pigments, to increase the mutability of the material itself.

I am highly interested in OLEDs because of their printability via inkjet or screen-printing technology onto flexible surfaces such as thin foils. This versatility offers a great potential for applying the technology to a wide range of materials.[3] Digital displays made from textiles might become possible — introducing tactility and materiality to the digital image. Embedding such displays into clothing, interior spaces and architecture, the transition between the digital and the physical becomes seamless and the overlap of the real and the virtual almost unnoticeable.

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1 R. Venturi. 1977. *Complexity and Contradiction in Architecture*, p. 16.

2 Collaboration with choreographer and researcher Chrissie Harrington, who at the time was Head of Dance at Bath Spa University, and graduate students from the same department.

3 http://www.it-strategies.com/Spectrum/2004/12.htm

http://en.wikipedia.org/wiki/Organic_light-emitting_diode, on 30 April 2008

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http://en.wikipedia.org/wiki/Organic_light-emitting_diode

http://www.it-strategies.com/Spectrum/2004/12.htm

Artificial Nature as an Infinite Game

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Abstract

"Artificial Nature as an Infinite Game" is a trans-modal media art installation consisting of an evolutionary virtual world with a physical user interface. This virtual world is a complex, open, dynamical and dissipative system, interweaving physico-chemical, biological and symbolic strata. In actual space, spectators can witness, control and discover beautiful, generative and abstract spatio-temporal patterns evolving from the behaviors of a-life agencies in the virtual space, while the art work itself is questioning of a new understanding the concept of beauty and creativity in nature, culture and actual, virtual world.

Introduction

One may recall experiences from childhood playing with his/her fingers in the flow of a river, or in the path of small marching insects, to alter their emerging patterns. Such interactive play with complex systems not only produces fascinating natural patterns but also provokes deep insights: ludic investigations within an infinite game.

Our motivation is to develop a deeper understanding of emergence and creativity as a form of art, research and play; in short, a path to knowledge, understanding and expression.

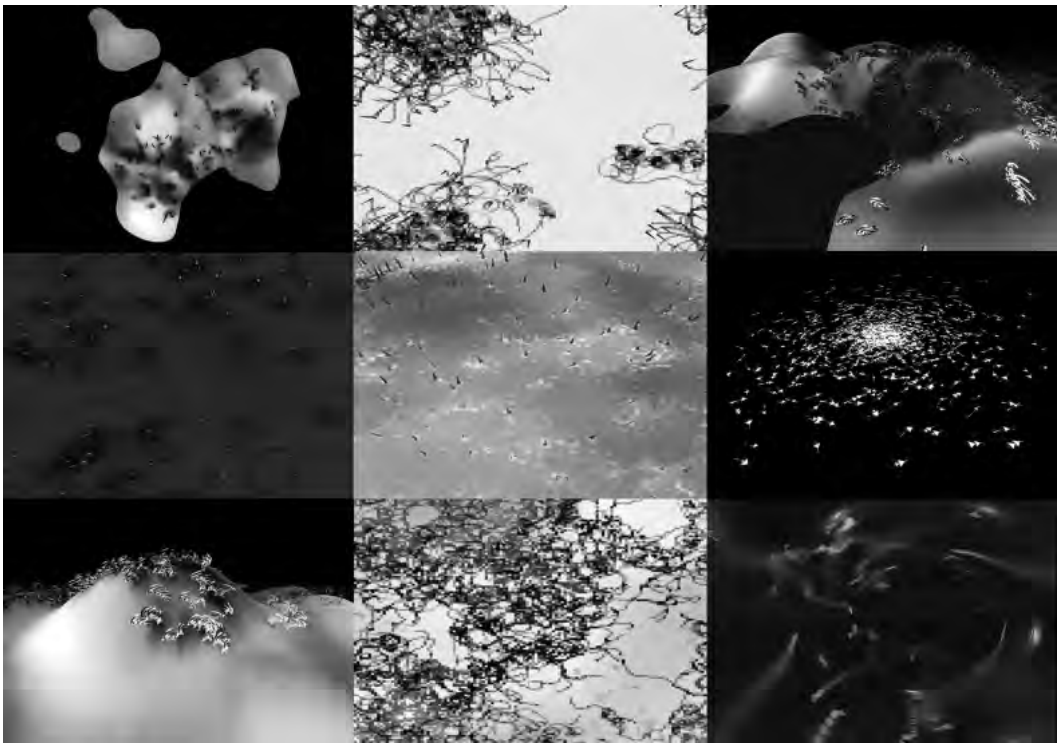

Figure 1: Excerpt images from "Artificial Nature as an Infinite Game"

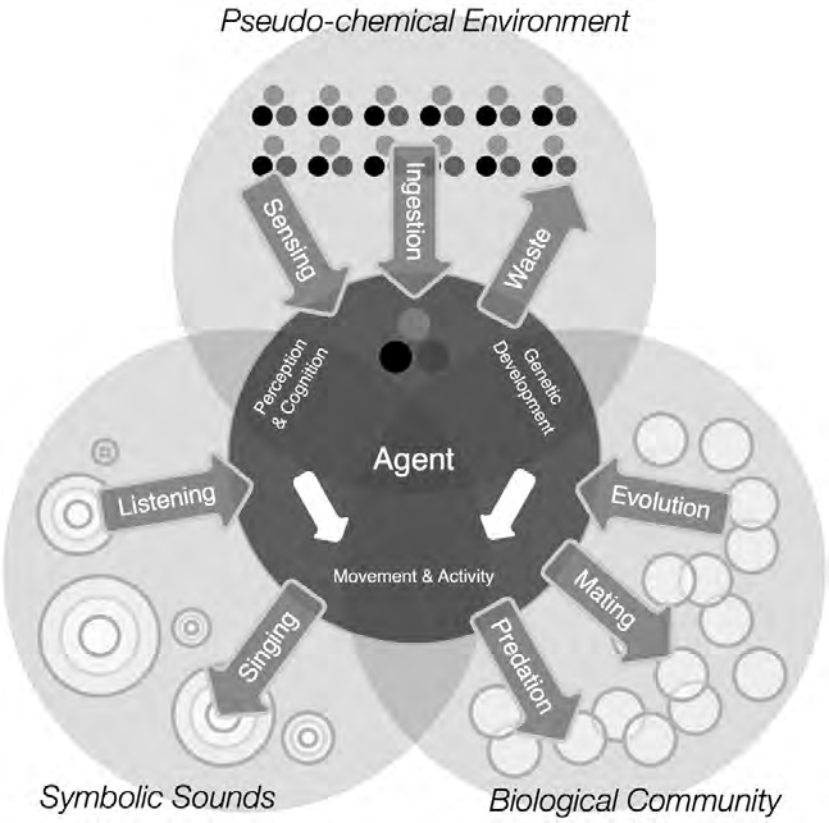

Figure 2: Significant properties and processes within the ecosystem.

We approach this cross-disciplinary subject through an audiovisual evolutionary art installation and multi-agent system entitled 'Artificial Nature'. Our goal is to provoke in spectators as well as our selves questions of life, beauty and self.

In the following sections, we will describe our two principal concerns; the design of the ecosystem and the aesthetic questions of Artificial Nature.

Worldmaking: ecosystem

The world contains numerous agents with an environment of three superimposed strata with distinct processes and properties (Figure 2). The world is self-sufficient yet also responds to user interaction.

Three Strata

Our ecosystem begins with a spatial field of pseudo-chemical elements (represented as RGB color concentrations). The field itself may generate order as a dissipative structure:[5] it receives a free influx of continuous but variable energy and is subject to entropic decay.

Within this field live populations of active biological agents. Agents constantly exchange pseudo-chemical elements with the environmental field in order to gain energy for growth and behavior, and discharge toxic waste. Agents contain virtual genes, hierarchical data structures which are gradually evaluated to guide development and behavior. Evolution of genes occurs through crossover and mutation in reproduction, while fitness emerges due to adaptive environmental conditions in the ecosystem itself.

Agent behavior may include movement, growth, chemical exchange, reproduction, predation and building, however it also encompasses a symbolic realm of perception and cognition. Agents may perceive and act upon internal and environmental properties, but also emit and listen to local sonic signals. Signals have no a priori meaning yet may self-organize by association within social groups.

Interaction

The spectators can navigate and interact with this evolving ecosystem as if one might encounter a new, unfamiliar species in a "cultural" forest. An immersive visualization of agents and environment is projected

alongside the spatialized agent sounds. Input using a touch screen, contact microphones and additional sensors may change local properties of the environmental field, and the viewer may actively observe and learn how the feedback systems produce new behavioral patterns in the virtual world.

Implementation

The system is implemented using the LuaAV[6] software framework. LuaAV supported the rapid development of an interactive, audiovisual virtual world, while the embedded language Lua[1] is naturally suited to real-time simulation because of its extensible, dynamic nature and efficient garbage collection.

Aesthetic and philosophical approach

Why are we, as artists and researchers, eager to work with complex adaptive systems? One answer is that it allows us to question the world itself, rather than merely a view of it.[4] On that account, we can integrate our understanding of the world, art and life into the creation of speculative new worlds, so that worldmaking may engender more powerful aesthetic experiences. As Langton suggested a-life may research 'life-as-it-could-be',[2] McCormack identifies a class of evolutionary art, to which our research belongs, exploring the concept of creativity in general (paraphrased into 'art-as-it-could-be').[3]

Nature and culture, actuality and virtuality

Artificial Nature provokes speculation on the concepts of creativity and beauty in both nature and culture. The evolving beauty of emergent complexity is intrinsically man-made yet follows an understanding of the mechanisms of nature itself. As such it may emphasize the comparison and fusion of virtual and actual, cultural and natural. The virtual world functions as information visualization just as the actual world presents to us traces of underlying processes of becoming.

Locus of authorship

The consideration of Artificial Nature as a living system with autonomous creative potential calls for a reconsideration of relationships between artwork, spectator and artist. All three living systems work together in the process of emergent creation. The locus of authorship is shared among a less hierarchical assemblage of living systems.

Spectators will be conductors or performers playing a generative multi-domain open work. However, the method to conduct or to perform is not direct. The indirection invoked through the emergent environmental feedback of the a-life agencies is crucial to allow the integration between learning, playing and creating.

Conclusions

Artificial Nature is an ongoing research project. Throughout its development, we have implemented case studies to prototype-reduced portions of the entire system, to synthesize minimized core algorithms and aesthetic approaches at each level. It has allowed its system designers-artists to learn deeper insight and to enjoy the balance and tensions in linking the multiple nodes and layers to produce beauty.

The meaning of our research leads towards our cultural evolution. We believe that art will be a great adaptation tool in the future of our species, which will continuously desire and generate intelligent cultural information.

Most of all, our ecosystem will continuously grow as a living system. What we ceaselessly play and learn from through the making of Artificial Nature is truly an infinite game.

Acknowledgements

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The Nature of Experience in Transcultural Cinema

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Once upon a time, this essay began with a narrative depiction of two high school students engaged in a cross-cultural filmmaking exchange project. Writing it helped me to draw out specific concepts and ideas, and the fictionalized scenario left room for audiences create personal connections to the ideas. Perhaps the first sentence is enough to begin forming images and associations.

How would my process have been affected had I made a short film instead? In what ways could it be more or less ambiguous, descriptive, powerful, subtle, or educational for you, the audience? There's no concrete answer — presenting something visually is no more a guarantee of a certain outcome than a collection of words are at creating poetry. I think it's instructive to focus instead on the qualities of the medium — what is the nature of visual communication, especially in relation to the focus here on cultural awareness? How does the medium embody questions and perspectives? What are the qualities of the medium itself that create particularly powerful opportunities and complex challenges as a means of communication, interpretation, and intersubjective connection?

Film as medium

Image

In a text-based world, images are boiled down to the words that can describe them — descriptions that take on definite and specific meanings. David MacDougall offers that *meaning* is our guide in consciousness, at once capable of opening our eyes to new terrain as well as reducing the world to only what we want or expect to see (MacDougall 2006).

As a constructed medium that can never capture "reality," film operates in a liminal space where our conceptions about the world are negotiated — a place somewhere between sensing and meaning-making. I argue that this is an especially fruitful place for pursuing questions about how we see ourselves in relation to others and providing experiences of transcultural *transcendance* — truly seeing with new eyes.

Narrative documentaries like Helfand and Gold's *Blue Vinyl* (2003) must walk a line between position paper and art film, and as such are useful as a lens for looking at explicit goals of persuasion. Helfan and Gold are clearly hoping to change our minds about vinyl or raise awareness about the broader impact of our consumer choices, but are they really drawing on the power of film to transcend what words can do so well? To extend the question, how do the challenges and opportunities in an observational film like Geyrhalter's *Our Daily Bread* (2005) compare in the area of persuasion and argument?

We ought to follow MacDougall's advice and not simply insist "that we must do a better job of adapting [images] to the rules of scholarly writing. This will lead only to bad compromises. If we are to gain new knowledge from using images, it will come in other forms and by different means" (MacDougall 2006:2). Where is the line where our words must give way to meanings that are in the images themselves? Can we, as Feld suggests, draw on devices of dramatic storytelling without operating in the domain of words (Rouch 2003:10)?

Method and Style

> "At the crudest level, the MacDougalls' refusal of the … "suturing" together of shots from different camera angles into a seamless diegetic whole, does not so much conform to the plain style of realism as it actively contests it" (Lucien Taylor, MacDougall 1998:9).

Film has been exported around the world and wrapped up in everything from scientific inquiry to social development. From Margaret Mead's studies in Bali and Papua New Guinea to the British Colonial Film Unit's use of film as a social tool in Africa, the moving picture has long covered the entire continuum from aesthetic exploration to practical needs and purposes. Rouch lends a developmental view when he suggests that because of the BCFU's work, film became an "essential medium of mass communication," thus creating the conditions for

the "flowering of a typically African cinematographic art…" (Rouch 2003:67).

Film as experience

As American philosopher John Dewey developed his experiential approach to education early in the 20th century, filmmakers like Robert Flaherty were discovering the importance of experience in filmmaking. How can we think about filmmaking and film viewing in terms of what Dewey would consider a meaningful experience, one that both meets the producer and viewer where they are and opens up new areas of knowledge that are personally relevant and valuable to society (Dewey 1934)?

Referencing the experience of filmmakers, David MacDougall offers, "Before films are a form of representing or communicating, they are a form of looking. Before they express ideas, they are a form of looking" (MacDougall 2006:6-7). MacDougall is suggesting that *looking* is the tip of some kind of multi-dimensional iceberg: reaching to both the past and future of every film "product" is a network of dendritic connections that at once emplace the filmmaker and the participants in their creative and intellectual development as well as chart the impact of the film on viewers' future thinking.

Changing Minds

Jean Rouch, who arguably brings together the qualities of looking and experience that MacDougall and Dewey outline, once collaborated on a "fictional" film about racial tensions with an interracial group of students in 1960s Cote d'Ivoire. The revelations and meanings therein for Rouch, his collaborators, and eventual viewers owe something to the situation that the medium itself creates: "Rouch insisted that the presence of the camera, like the presence of the ethnographer, … catalyzes, opens a window …; people respond by revealing themselves, and meanings emerge in that revelation" (Rouch 2003:16).

J.P. Sniadecki's *Songhua* (2007) is at first glance a meditation that meets viewers wherever they are, inviting them to develop their own connections to the world that is being slowly revealed before them. The remarkable quality of this film, however, is the subtle stitching together of diegetic moments and unresolved questions that helps the viewer's questions become more probing as they watch further, not less. Rather than "figuring it out" and stepping back from the dialogue of the film, by the last shot the viewer is engaged aesthetically, artistically, and intellectually.

Pulling back a bit, we see that film itself is situated in social and historical contexts as well as in the experiences of creators, participants, and viewers. Toward a cinema that awakens us to the world and helps us develop more sophisticated and nuanced conceptions of ourselves and others, we need to build on the experiential nature of film and encourage reflection among creators and viewers alike to help turn new perspectives into new behaviors and changed minds. At this intersection of genuine experience and reflection lies a transcultural cinema through which we can continue to learn and grow — a cinema, in view of text-based dichotomies of self and other, local and global, that transcends.

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In Place-Spective

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Introduction

Although most terms of *place* associates to space, the concept of *place* in the online communication implicates with social interaction rather than merely physical setting. The interrelations between *place* and persons are mutual as a *place* cannot exist without people,[1]while the interaction between people makes it possible to form a *place* without space.[2] This *spaceless* notion of *place* will be discussed further in terms of online social interaction.

The outcome of this research was implemented in an installation project at Copenhagen Airport, Denmark. With an intention to promote social interaction among passengers, the installation aimed to re-establish the sense of place by facilitating an indirect communication, where the people could share their dreams with the others.

In place-spective

Many studies in relation to the *sense of place* are focused on the psychological, anthropological and geographical facet of physical location. However, with the online interaction, a sense of place has proven to exist without material space. The detachment in the concept of physical space and the sense of place becomes clearly visible through the online technology — cyberspace becames a *place* for people to socialise, meet and hang out. The online phenomena confirm the sense of place as an abstract feature built upon an intervention of site and personal experience, because "when people refer to *place*, they actually refer to their experience".[3] By focusing on the online communication, Harrison and Dourish developed the term "spaceless-place" and explain that "the sense of place must be forged by the users; it cannot be inherent in the system itself. Space is the opportunity, and the place is the understood reality. Just as space provides the underlyning opportunity for a media space, place-making providers its realities."[2]

Different from virtual reality, the *spaceless-place* is built upon the "placeful discussion and navigation without physical space".[2] Without a visualization of a physical world or any perspective metaphor, electronic mailing lists, internet forums, online communities and weblogs are applied a sophisticate level of abstraction. This complexity urges the users of online technologies to create their "personal cosmologies"[4] when the conceptual view of the (cyber) world is concerned. Perhaps the sense of place is one of the cyberspace 'cosmologies' we establish to have the better orientation online. More examples these cosmologies (e.g. forum, library, marketplace) are mostly developed from spatial metaphors to make the systems comprehensible.[5]

At this point, one could consider that the sense of place in cyberspace is potentially derived from our behaviour as a part of social a mechanism which influence the way we communicate and navigate around the social ring. Still, the question remains for the concept of (cyber) space. If the *placefulness* provides us with a uniform to conduct an appropriate social manner, then what is the correlation the cyberspace's *space-ness* have with the offline world? To answer this question, Chalmers referred to space in a form of medium which represents itself among others. Therefore, the underlying notion of physical and computational space is propagated from language in order to make them understood.[6] Therefore, one could claim that the *space-ness* of online activity emerges from metaphorical cognition. It is an intervention of the way we construct the sense of place; the key to perform a successful social interaction.

Social interaction

In contrast with the rapid growth, the way the airport operates is slightly changed in last decades. The main strategy is to expand facilities, provide entertainment and comfort to establish a long-term attraction to the passengers. A place that used to merely transfer people on board an airplane has turned into a department store complex which is full of services like restaurants, duty free shops, game arcades, casinos, etc. Conversely, the building of airport department stores like this does not improve the experience of many airports' visitors — it is just an attempt to mimic the real world outside. Facilities

as such do not enhance the passengers' experience because it does not give the transit area an identity, but make it more homogeneity. Consequently, being at the airport is a negative experience as the characteristic of transitional space makes up for its lack of meaning[7, 8], while the homogeneity conveys no sense of belonging.

To reconstruct the sense of place at the airport, we need more than renovating physical environment, because there are activity and experience that also involve in the *placefulness*.[9] Having discussed social interaction as a main finding from the research, I was eager to apply my thesis to the public site — a transit area of Copenhagen Airport in Kastrup, Denmark.

Figure 1: An installation of *Washroom-Notice* (left), and *I wish, I could* poster (right)

My aim was to establish a platform to promote a spatio-temporal communication between passengers. Therefore, Washroom-Notice (2006) is an installation consist with posters each attached with a small pencil for people to write and reply to each other. It is an attempt to create the sense of place by letting the passenger memorise their experience from conducting social interaction behind the toilet door. I believe that the private atmosphere of the washroom and the surveillance-free environment of the toilet are expected to give the participants a confidence as well as freedom of expression. This was an opportunity for people to share their dreams and stories — a small moment to recognise and get to know the strangers.

Conclusion

The sense of place found within the online communication gives us a new perspective beyond the existing notions of place. This metaphorical cognition of cyberspace set apart the concept of place from the physical setting. With this fresh look provided by the online technology, social interaction has become another possible source of the placefulness without the underlying notion of space. During the project, I have become aware of the great potential provided by social interaction. Still, we should keep in mind that social interaction is not the only foundation of place but one of the efficient methods, since the sense of place is an absolute subjective.

Acknowledgements

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Traditional Art Concept in Digitalised Era

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Every art form is emerged relaying on the development of society and technology at the time. Digital arts appeared along with development and popularity of computer technology. Although the earliest digital artwork can be dated back to 1960s, it was after Apple Computer Company invented Macintosh 'desktop publishing (DTP) system' in 1980s, digital arts field started to gain more attention. The maturity of digital technology drove more artists integrating their artistic talent with digital technique along with development and popularity of computer-aided design (CAD) and computer-aided manufacturing (CAM). While digital technique is showing its ability in supporting commercial design, its unique visual presenting language is also adopted into some artists' art works.

Digital technique brings excitement and visual novelty to artists; at the same time, because of cultural and technical differences, it shows some disabilities in showing the same expression and emotion as traditional visual arts such as paintings can do. Because of some misunderstandings in digital arts and traditional art concept, it seems that digital arts can only work for certain themes and has not relation with traditional arts concept. Through traditional art creating cultural origin study, possible digital arts' visual presentation, aesthetic predisposition and the bridge between traditional arts can be seen from adopting some fundamental delineations, colours and cultural elements. Using traditional arts, especially literacy art concept to abound digital artwork content; adopting traditional literacy comprehension to fill the cultural hole in digital arts are the logical ways of presenting traditional beauty in cyber space.

The aesthetic emotion gap between traditional art and digital creation firstly came from the culture origin difference. Take painting as an example, traditional paintings are painted basing on depth cultural inside and historical sources, which contain elements of region endemicity and national culture. Traditional arts have many different forms; contain depth cultural accumulation and lodgement; present national psychological-sensibility, custom, aesthetic outlook and aesthetic sentiment. The deep historical tradition, numerous style schools, large amount of regional culture elements as well as mode and cultural origins presented by traditional arts bring affinity and resonance to people psychologically. On the other hand, as a new art form, digital arts were developed in the technological and manufacture environment. Its aesthetic emotion is lack of traditional literacy foundation. The limitation of themes and presenting formats bring strangeness and distance to people. Secondly, involved modern technologies cause differences in creating methods and presentation approaches. Apart from material and skill developments, techniques of traditional arts such as paintings and artefacts creating have never faced such big impact as digital technology created. As people still generally think traditional culture only exists within traditional craft material and skill, it takes time for modern technology such as digital technique making transform and continuity in traditional culture to be recognised and accepted. Long history of traditional technique and ink mode in paintings make people accepting traditional paintings' artistic value. On the other hand, lack of understanding and acceptability in digital arts causes the emotional distance to viewers.

Digitalised graphic process is the keystone of digital art creation technology. These digitalised neat and accurate visual style make digital works seem lack of affinity, which is also the defect of many contemporary digital art works. Moreover, the style of presenting is another reason that causes emotional difference. Traditional painting went through a long period of development and transmutation, which came into being many presentation forms and creation styles. These traditional artistic languages are easy to communicate with as well as create resonance with viewers. On the other hand, machinelike digital creation cause disadvantage in making certain presentation languages and modalities.

Absorbing different culture and knowledge from other areas for presentation of digital art is one of the understructures for developing digital arts. Integrating national transcendence traditional culture and art

modalities is a way to enhance the charm and vitality of digital art design. Digital arts creation also has its own attractive quality. It provides a visualised approach for artists' creating construct as well as maximally bring artists' thought and imagination into their art works. After being dazzled by abilities of digital technology for while, question of value of digital art has been raised.

Just like Western painting went through classicalism, impressionism, abstract expressionism and so on since the Renaissance, Chinese paintings have also transmuted. Transmutation of art form or style is a long process with complex background. Because of the commercial background of digital art design, some people apperceive it superficially with some misunderstandings. There are three major erroneous views about digital arts. The first one is being 'omnipotent'. Thinking computer as an omnipotent tool is deification and exaggeration to digital technology. It is misleading for art creating discipline and presenting format. Focus on simulation instead of original creation is naive understanding of relationship between digital simulative and creative abilities. Being aware of expression character of digital art creation and recreation is the way to play with its biggest advantage. Second misunderstanding is 'commercial purpose'. As computer design has been widely used in commercial industries, the concept of computer arts seems lack of art theoretical source. Many computer art works are showing personal computer skill rather than artistic outlook. Art and culture have not been showing in the digital world for long. Until now, it is still difficult to put digital art on to a higher artistic aesthetics position. Along with developing digital arts and innovating its creating mode, its artistic value will break the commercial impression and occupy a more important place in realm of art. The third misunderstanding is the value of digital arts. Traditional arts are value and more accepted by their historical sources, region customs and certain culture delivering. Compare to traditional art works, digital technology's mass production ability becomes disadvantage in art piece value psychologically. However, we should not recognise digital art creation as one kind of technology but a new form of art, which has its own visual language and presenting style. Therefore, value of digital art works should not be measured by using traditional value standard.

Although computer is also called 'electronic brain' in some languages, it is still not human brain. Same as other artwork creating tools, computer can be seen as extension of human brain which brings out the idea of an artwork. There is not such thing as 'preface' form of art. There are also disadvantages in term of computer arts. Artistic cultivation is the premise of creating computer artwork. The artistic expression of a computer artwork can be improved. Cultivation is the determining factor of creating a good piece of artwork. Lack of cultivation is the current reason that computer art has less value in Chinese fine arts field.

Digital art is a new art form in digitalised era. Working out the connection between digital art and traditional artistic sources is the key to enrich the language of digital art and well present the digital beauty in form.

Collaborative and Creative Documentary Production in Video and Online

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Introduction

The collaborative production of screen-based narratives, how they are shaped by their respective technologies and production contexts, will be discussed in this paper by drawing on research data gained through a PhD Practitioner-led research project. Using a framework provided by the System's Model of creativity, an examination of the interactions and the collaborations a practitioner has with 'field' experts (Csikszentmihalyi, 1999) will be investigated. Field experts have been identified for this research as all collaborators who contributed to either the video or website production process, or documentary subject area including 'on-camera' participants. Thus, this research will reveal the collaborative significance of the field through the video and online production contexts of the Fort Scratchley Research Project.

Fort Scratchley, a historic site in Newcastle, provided more than 200 years of Australian community history that was packaged into a low-budget fifty-five minute documentary DVD, *"Using Fort Scratchley"* and an online interactive documentary/website *"Fort Scratchley a Living History"* (www.fortscratchley.org). Broadly speaking, the two narratives tell stories about the five Australian communities that have used the Fort Scratchley site. The video begins dramatically with an animation of a Japanese Submarine firing on Newcastle in 1942 and then the historical and restoration stories of the Fort unfold. The website is a glorified time line containing over 300 media files. Its interactive structure allows users to view material by date or by a chronologically prescribed tour. The tour options are Maritime, Military, Coal Mining, Theatrical and Awabakal — the local indigenous community. The website was created after the video which allowed for the footage to be re-edited into short segments for online delivery. Each entry provides access to still images, documents and articles or video footage that relates to a particular date or time period.

My role for both productions was that of content creator and producer. Previously I have been professionally employed at the Australian Broadcasting Corporation as a Television Producer/Director. On the video production I was the producer/director but due to crew restrictions I also undertook other crew roles. On the website production I was the content producer, preparing media for the website programmer.

Methodology and theory

The PhD research employed an auto-ethnographic research methodology known as Practitioner Based Enquiry (PBE) (Murray & Lawrence, 2000), that ran in parallel with the production of the two screen-based media products. PBE is a methodology that provides a way of exposing a practitioner's creative process that can be both overtly collaborative as well as drawing on knowledge that is tacitly stored through their own skills and practice. At the heart of this research is an understanding that creativity, while being an individual or mental process, is also a social and cultural process (Becker, 1982, Csikszentmihalyi 1999, Paulus et al, 2003, Wolff 1981). More importantly, in order to be creative, an individual draws on a larger body of knowledge which is accessed through a social system. The System's Model of Creativity (Csikszentmihalyi, 1999; 315) is used to explain how it is possible for an individual to draw on a set of antecedent conditions. This model exposes the collaborative process of creativity, whereby creativity can begin at any point in the model and each of the three components are equal.

For creativity to occur, a set of rules and practices must be transmitted from the domain to the individual. The individual mustthen produce a novel variation in the content of the domain, the variation then must be selected by the field for inclusion in the domain (Csikszentmihalyi, 1999: 315)

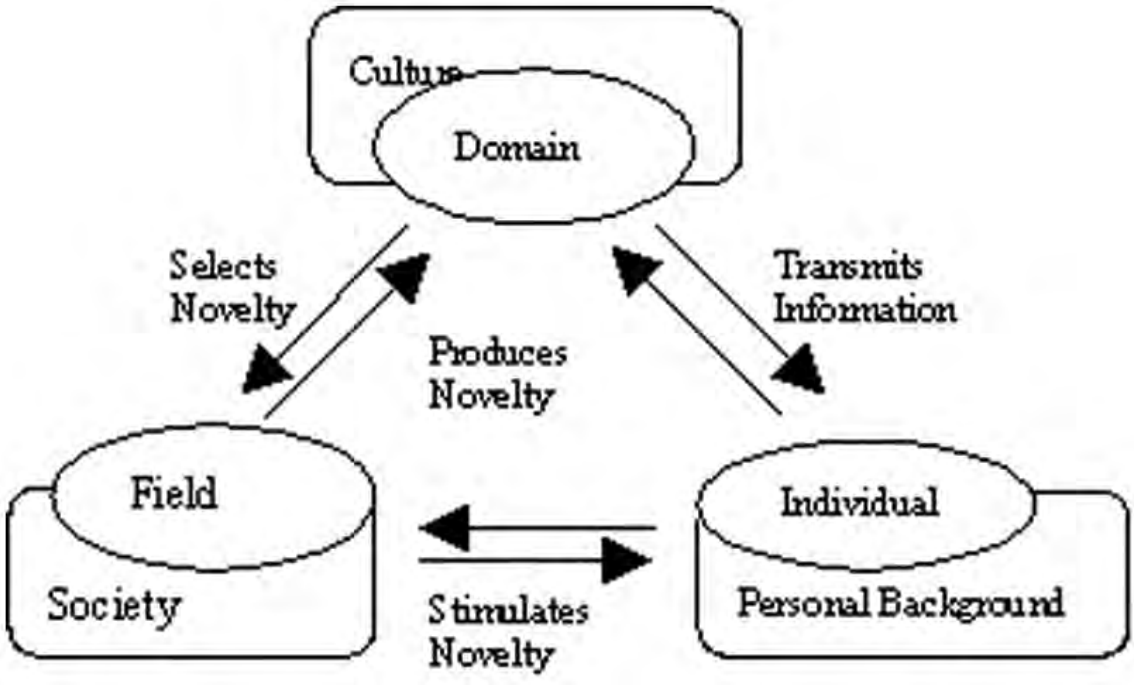

Figure 1: The Systems Model of Creativity

The framework provided by the System's Model is used in this discussion to explain the process. As the 'individual' I am required to deal with feedback and collaborative 'field' input during production. Thus, the 'field' of experts are identified as all collaborators, either individuals or institutional bodies who contributed to the project. The domain is identified as the body of knowledge which exists on the history of Fort Scratchley and video and website production technology. Thus I will be drawing on my background in television production practice, and my understanding, interpretation and internalisations of the rules of the domain and opinions from the field. My creative collaborative process is how I assess and mediate the information and knowledge that exists within this Fort Scratchley Production context. What follows is a brief discussion about some key interactions with members of the 'Field'. I have identified their contributions and collaborative input into shaping the narrative as it occurred through the production process.

Collaborative production practice

The 'field' members, who contributed to the video documentary production over a four-year period, can be crudely broken down into three groups. These are nineteen technical crew, twenty interviewees, and twelve institutions. Institutions in this case are Museums and Cultural bodies that house archival material as well as the Local Council who commissioned the work. Each contributor brought different sets of skills and knowledge to the project resulting in various forms of collaborative practice. Since 'the (social) context affects group functioning' (Paulus, 2003: online) an explanation of the production context, budget and skill base is necessary in order to define the contextual parameters of the production.

The video was a low-budget production — under $20,000 (AUS). As a University Research Project it used a core of five undergraduates who worked along side three professionally skilled practitioners. The consequences

of this were that dramatic variations in skill levels meant there were times when production progress was slow, while undergraduates worked out how to negotiate specific tasks or technologies. Conversely, the undergraduates contribution to the project was essential, particularly in relation to the development of the 3-D animation sequences and preliminary editing tasks. The collaborative input from the technical crew was fundamental to the project as the scope of the project was too large for me to undertake by myself.

The website budget of $10,000 (AUS) was secured through a University research grant, which allowed me to employ two professionals. These funds enabled the development of an efficient collaborative environment. Consequently, there were collaborative discussions to ensure that the website design would effectively show off the multi-media and provide an enjoyable user experience. For example, the final Flash interface-design was suggested by the Website Programmer and allowed for a time line specific data-base that offered a selection of multi-media options relating to each date.

The Fort Scratchley Historical Society (FSHS) also gave me access to their archive which contained information on the 130 year military history of the site. While it could have been possible to make a documentary exclusively about the site's military history, I realised as my research portfolio expanded, that there were also other communities who had used the site. This became evident as the archival newspaper articles from the 1870's revealed different names for the site.

The site has been known as Signal Hill, Flagstaff Hill, Captain Allan's Hill, Fort Fiddlesticks, Fort Scratchley, Collier Point, and Tahlbina. These different names represented each community which at some point in the Fort's history *used* the site. Explaining which communities had used the site and the nature of their activities became one of the main drivers of the narrative. Therefore the story evolved into one about the site's geographical location and how site use and community dominance on the site changed with defence and maritime technologies. The eventual withdrawal of the military in 1972 saw the site return to community hands. These themes also provided inspiration for the documentary title.

The title for the website was inspired by the 'Living History' methodology that was used by the University of Newcastle historians who were collaborating on the research project. Their task was to write a 7000 word booklet on the Fort and through their methodology, bring a real life perspective to past historical events through re-enactments and oral history interviews. The interviewees contributed their stories to the project, including the video and website, agreeing that any profits from these would go directly to the Fort's upkeep. Thus factual historic events were brought to life through the inter-cutting of interviews, 3-D animations and the use of archival photographs and film footage.

Conclusion

This selective examination of the contributions from some of the 'field' experts spotlights the diverse range of collaborative input on the Fort Scratchley project. On reflection, in order to incorporate all of these inputs, I developed a working process by which I could assess all collaborators' project input in order to filter out inappropriate or biased contributions and keep the project moving forward.

In summary, the evidence presented above confirms that the 'field's collaborative contributions and feedback were significant and helped shape these processes and, ultimately, the final narratives presented on the Fort.

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Decoding Gaze in Science, Technology and Interactive Media Art

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The underlying gaze on space and presented interaction possibilities in arts, science, and technologies seem to replicate ideas of exploration and annexation of new territories. The interaction with humanoid machines and other social and electronic devices seem to follow certain strategies. The designs of the apparatuses change with time, but the implied perspective on and interaction with the easy-to-dominate other remains similar.

To analyze the question of repetition of perspectives and interaction patterns in media arts I would like to confront recent media art pieces, with the notion of *gaze* as used in cultural studies. *Gaze*, as a term used in cultural and image studies, operates on the distinction between a (supposedly) objective perspective and look, on the one hand, and, on the other hand, a culturally informed and selective *gaze*. I employ the term *gaze* in the sense in which it is found in Foucault´s *Birth of the Clinic* (1973), in which the author attempted to identify the reductive perspective of medical doctors on human subjects as mere bodies, and not persons. The term became current in studies of visual media in the seventies of the last century with Laura Mulvey's essay »Visual Pleasure and Narrative Cinema«[1], in which she used the term gaze for the male perspective on female actors in film. Laura Mulvey described gaze as »to–be–looked–at–ness.« She argued that cinema creates sexual difference in the way we look, fostering female passivity and male actors as drivers of the narration.[2] The distinction between look and gaze can be applied to other media. In 2006 Laura Mulvey connects the idea of gaze to technological settings in general: »while technology never simply determines, it cannot but effect the context in which ideas are formed.«[3] I want to apply her idea of a culturally and by medium determined gaze to multi media experiences. In this short presentation I want to show that certain cultural strategies of exploration or hierarchical structures in social interaction are not only reproduced in images, but are also strengthened in technology-based, interactive environments.

The notion of gaze is analyzed through observing the pre-codedness of the receptional strategies in *Run Motherfucker Run* by Marnix de Nijs (2004). Lastly strategies on how we could learn to meet our environment with an un–coded look are illustrated through interactive art projects that differ from the commonly practiced approach to technology and the exploration of abstract outside data, and use the whole sensual capacity of the body to focus on emotion as an embodied experience to set up new hierarchies in the art work – user relationship. An example of this phenomenon is Nicholas Stedman´s *Blanket Project* (2000–2004), in which a sensor–based, moving blanket dominates the interaction with the user, who is invited to share the bed with this comforting artwork.

Explorative experience in interactive and immersive arts

Shortly after humans first explore extraterrestrial space in 1965 the scientist and artist Frank Malina created a kinetic mural called *Cosmos* for the Pergamon Press Building in Oxford, England. In *Cosmos* outer space can be experienced and explored as three — dimensional space. Not only since then have visualizations of scientific disciplines like biology, astronomy or space science been used as sources for[4] technological and virtual art.[5] In his overview on immersive settings in the visual arts the media–art historian Oliver Grau states, »the desire to be in the picture, in both the metaphorical and nonmetaphorical sense, did not disappear with the panorama but lived on in the twentieth century.»[6]

The desire to access the unknown, to be part of historical settings, or to explore extraterrestrial space or microorganism can be a motivating factor to design immersive environments. The devices to access such environments change with technological progress and Zeitgeist. The idea of immersion in and appropriation of (unknown) territory seems to be repeated.

More current projects like Marnix de Nijs´ *Run Motherfucker Run* (2004), a virtual suburban video game environment accessible via treadmill, still focus on the idea of exploration, even though a critical approach

can be observed in the choice of uncomfortable input devices as interfaces and unpleasant scenarios, as in the chosen example.

The player, who should be in good physical condition, has to operate the game, which is projected on an 8x4 meter projection screen from an ego–shooter perspective by running on a treadmill facing the projection screen. The distance the player runs on the 5x2 meter conveyor belt is the same distance that she/he will cover in the virtual city projected in front of him. The faster the player runs, the clearer and brighter the image in front of her/him gets. The unpredictable movements of the conveyor belt make it even more difficult to navigate. Marnix de Nijs art piece plays with the joy of navigating through unknown territory, despite aspects that could be viewed as unpleasant such as, the exhausting physical activity and the unsteady ground, that may trigger negative feelings like anger, frustration or even fear. The user immerses him/herself in the unknown.

Decoding gaze in immersive and interactive media art — perspectives

"When I wake up in the morning and see her face over there, it makes me feel so nice, like somebody is watching over me."[7]

The brief notion on the behavioral sculpture *THE BLANKET PROJECT* (2001–ongoing, figure 2) by the Canadian artist Nicholas Stedman shall show how artists put the focus on strategies that are not based on the idea of expansion, exploration or appropriation, but foster confrontation that put user and art piece on a par, or even reverse the artwork – user hierarchy.

The electronic blanket gives the users the impression of knowing their needs. Here the interaction focuses not on the exploration of new territories, but on the establishment of emotional and physical comfort of the user. Introducing a new relationship between blanket and user interrupts the usual gaze on a blanket.

The short presentation of the above mentioned projects might show possibilities of »rupture d'évidence«[8] in the visual and sensoric strategies applied in interactive arts. The artists refuse to reproduce common explorative and appropriative gaze on the interaction devices and in the interaction itself, but open up new audience/user — art piece — relationships. The outcome is neither the typical enhancement of the human body nor the expansion of the users playground, but a respectful acknowledgment of technological possibilities and human limitations.

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Spaces of Intimacy

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The problem of identity is most discussed in the field of cultural studies nowadays. It has become clear that the concept of identity in the late modern age has changed greatly and taken on an open form of unstable process. New technologies, which are considered extensions of the human mind and body, have influenced their identity. Technological contexts of all these processes make the current research on identity closely related to the issue of cyberculture and its characteristic instruments of expression: new digital communication media. Debates on identity in the context of new media aim to develop critical discourses concerning the position and features of the individual in the age of the global transcultural communication.

After Mark Poster, I distinguish between the notions: *individual*, *self*, *identity*, and *subject*.[1] Within this system, identity is nothing but a continuous process of self-negotiation (and re-negotiation) of the subject. If we talk about identity, we refer to "an individual who is deeply confused about who he or she is."[2]

Identity of an individual is sort of a play between its three aspects: individual, social and cultural. It is experienced by the individual through his feelings of constancy, consistency and separate character. The mutual dynamics between them are subject to continuous transformations. Variability is just one rule here. Identity thus becomes a self-constructing process of changes.

The fluidity of identity transformations is subject to continuous disruptions. Instead of an even, wide, single current, it takes the form of numerous currents flowing into different directions. Sometimes they come together. Sometimes they diverge. Even the individual no longer comprehends such a form of identity himself or herself. And this is the source of the question 'Who am I?' which is asked over and over again. This question can be answered with stories. Identity becomes a series of narratives.

Auto-narrative discourses as methods of creating identity accompany the individual during their whole lifetime, which proves not only that identity has a polyphonic character, but also that it remains at a permanent stage of reorganization. In situations where relational disturbances occur between the individual and his social and cultural aspects of identity, auto-narration turns out to be the most effective (or perhaps the only one?) strategy for identity self-organization and its basic form of articulation.

It is because of auto-narratives that the issue of intimacy becomes an important factor of the identity. Close relations with the others or the painful lack of them develop the space within which individuals construct their own identity, and this is also the space of numerous media artworks. In the following part of my paper I will discuss different approaches of Polish artists to their work.

I shall begin with the art of **Jozef Robakowski**. In the late 1970's and the 1980's his camera became a tool of an uncommon scale of subjectivity. With the help of video Robakowski could lead the viewers into the world of his own thoughts and emotions. Numerous works appeared in this period. *About my fingers* (1983) and *My theatre* (1985), are examples where viewers are allowed into the privacy of his experiences.

Besides the works creating the intimate relations between the artist and viewers, Robakowski made a number of tapes building another form of correspondence. Videos from the *cycle Dedications* possess their own particular addressees. Each of them is a sort of visual incantation or tribute to someone else. In these works, subjectivity acquires the dimension of concrete interpersonal communication. It is no longer just the figure of the author, but also the real person to whom the work is directed.

In the cycle *Vital/Video* in turn, the ironic attitude joined the intimate character discussed above, finally creating the characteristic quality of the oeuvre of Jozef Robakowski. In the paradoxical way, in the framework of the artistic attitude of Robakowski, subjectivity and privacy meet game-playing, irony, and manipulation, towards the ironic concept of fluent, performed, hybrid identity.

Another position was taken by **Anna Baumgart**. In a series of works the artist reveals the mechanisms that lead to the subservience of the individual to social conventions. She analyses the social and cultural perceptions of gender differences, roles that are ascribed to women through the patriarchal order and their own acceptance of relations between parents and children. She shows the world of men as reflected in the male ego, adored by women, and the world of women as seeking the approval of the male gaze, confirming their worth in male acceptance.

Baumgart takes the subject of its study from the labyrinths of isolated identities that are in flux, lack a full understanding of themselves, and passive. The labyrinth is a model of identity itself as well as an attempt at self-knowledge.

Three narratives persist throughout Baumgart's work. The first is directly concerned with questions of identity. Who is this person that I call "I"? Who emerges when you remove the mask of cultural convention? The second narrative is concerned with "surrogate" lives, of taking on other people's roles, manufactured or promoted by the culture industry. The third narrative addresses absent voices, those marginalized by society. The women who speak through Baumgart's works do not get a chance to speak out in their everyday lives, the majority remaining silent not by choice. In her work they speak out with their own voices. All three narratives are concerned with the problems of identity, viewing it as a conflict between individual existence and the cultural paradigm.

The attitude of **Piotr Wyrzykowski** combines the conceptual inspirations originating in Polish art in the 1970's with those of performance art, especially body art, of the 1980's. Wyrzykowski puts into focus the problem of body with its various connotations, in order to discuss bodily influenced visions of transformations of identity. In his works he concentrates on the issues of the influences of technologies on a perception of a human body. Phenomena such as telepresence, which means also a possibility of existing in a number of places simultaneously through a digital or analogue representation, are the tools for extending human corporeality. The tape Runner creates the visions of body movements in the context of constructed city space. The tape *Watch Me* is a visualization of the transformations of the artist body through digitalization process. Interactive, Internet-based *There Is NoBody* present a vision of fluid, undefined, and indefinite form of posthuman corporeality. All these examples bring the issue of somatically shaped digital identity into the front line.

The art of **Kinga Araya** is built on biography, on memory, and on the most private divulgences. Along with this insistence on privacy — as if in response — there is the appearance of irony. It allows not only for a distancing from the self, creating a sceptical self-portrait, but it is also a strategy that confuses tropes. It provides a method for translating the individual experience into everyone's feeling. With the aid of irony, memory is being transformed into imagination. Nothing is certain any more, except the experiences of form and emotion. This ironic dialogue with oneself usually accompanies the artistic experience of displacement. It helps to liberate oneself from the feeling of spiritual homelessness to overcome the pain of alienation. It emerges as a source of artistic creativity.

The displaced and estranged art — that which Kinga Araya creates — expresses emotions stemming from the state of dwelling in-between. Her work expresses

the sensation of estrangement coupled with the need for intimacy. Both feelings grow from the experience of displacement and alienation. These sensations direct us towards the idea of the Self. Further, they inspire introspection and reflection on one's immediate surroundings. They lead us towards contemplating the passage of time and our place within it. Displaced art is actually an art of estranged emotions.

In her artistic activities **Barbara Konopka** undertakes the problems of transformation, which are undergone by human body and human identity whilst facing revolution connected with rapid development of telecommunications and IT. As a leading person in cyber-feminist current in Polish art she finds a real cooperation with machines, learning their specific logic, complex perceptive apparatus and ways of expression a significant experience. Those ways of perception reinforce human abilities and habits and open new areas of activities.

The artists discussed above represent a sort of approach, which leads more towards explorations of personal life rather than formal investigations. The artists examine the problems of personal and social identities; reflect on the character of cultural and transcultural relations. Sometimes they are distant and ironic, sometimes dramatic and emotional. The works they produce are both analytic and immersive at the same time. They present different ways of communication between the private and the social, between the inner space of perceptions, feelings and thoughts, from one side, and the external world, from another. Reviling the hybrid character of contemporary identity their works can help us realize who we are not.

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Reinterpreting Networks of People as Fluid for Political Purposes

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For a term that has one of its roots in computer science, "networks" has become an ubiquitous word in daily discourse, especially when modified by the word "social". Not only do we spend countless hours managing and forming our social networks through online means, we use the phrase to refer to physical-space activities. We see things in terms of connections and links, the chains that tie one person to another, the means by which we "network" in order to gain influence or jobs. Coupled with this is the visual representation of these social networks, the commonly-seen jumbled mess of dots and lines. This view, when applied to social networks, has the well-known legend: dots refer to people, known as nodes, and lines refer to connections between them, known as edges. The use of the language of nodes and edges allows mathematical formalism from graph theory to perform computations on these networks, creating numbers that are meant to suggest degrees of "connectedness" or "centrality".

If we delve a bit into this view of networks (as it is as much tied to the visual as to the mathematical representation) a number of questions immediately arise. What are the conditions by which the network is instantiated or individuated (using the term of Alexander Galloway and Eugene Thacker)? Who gets to decide when a particular network is individuated? What are the means of controlling access to the network, the protocol that individual nodes have to follow to become part of the network? When someone creates a visual representation of the network, who is represented, what types of connections are represented, and when is the representation supposed to refer? The general representational strategy of graph theory flattens difference within the network by re-inscribing fixed relations via the discourse of stable nodes and stable edges — otherwise known as stable people and stable relationships. Such a view would suggest answers to these questions that are simply instrumental.

We do not have to see the network as representing a stable reality, however. If we flip our view around, the network can be an active agent in creating a particular view of reality, an ontological device to suggest situated realities, rather than an inert visual and mathematical tool that waits to be filled with data. Networks become less a means of fixing what already exists but rather objects that take part in crafting certain ways of representing the world over others. Responses to the previous questions are then not merely parameters to be chosen within a particular software package, but rather a means of creating differing ontological politics that have broader ethical, social, and political meaning.

This does not necessarily mean that our change of perspective has inherently emancipatory possibilities. We are still faced with choices about who, what, how, when, and why to represent. We are still faced with the problem that once we decide to represent a network, we are forever fixing, within that particular representation, one view of the world, and one that will privilege certain actors, people, and connections versus others. Indeed, this is one of the main critiques of actor-network theory (ANT) within science and technology studies. ANT aims to flatten the ontological space between humans and non-humans by showing how both types of objects within the world must be marshaled together in order to create, for example, a particular scientific fact or technological artefact. This combining of forces, and the need for the people and objects in the network to agree upon entering the network, sets up an inner/outer dichotomy that privileges actors within the network (what Ulises Mejias has termed "nodocentrism"). For Susan Leigh Star, in her well-known critique of ANT, this means that the "standardized network often involves the private suffering of those who are not standard — who must use the standardized network, but who are also non-members of the community of practice." Her critique, written over fifteen years ago, has been echoed recently by Thomas Berker who asks how we can look at suffering within these networks as the "uneven distribution of enabling and disabling effects" as well as the "uneven distribution of the ability to switch between networks". Suffering within networks occurs not only

because of inability to move in and out of a network, but also because of an inability to create a network in the first place.
What impact might these critiques have operationally on the design and implementation of an application for use within a networked world? I would like to refer to a recent project that I developed as a response to these issues, with the caveat that other responses can be made and that my project undoubtedly does not address all of the concerns.

The project, Fluid Nexus, is a mobile phone application designed to enable activists and relief workers to send messages and data amongst themselves independent of a centralized mobile phone network. The idea is to provide a means of communication between people when the centralized network has been shut down, either by the government during a time of unrest, or by nature due to a massive disaster. During such times the use of the centralized network for voice or SMS is not possible. Yet, if we can use the fact that people still must move about the world, then we can use ideas from sneaker-nets to turn people into carriers of data. We can create fluid, temporary, ad-hoc networks (via Bluetooth) that pass messages one person at a time, spreading out as a contagion and eventually reaching members of the group. This allows surreptitious communication via daily activity.

Fluid Nexus relies on, yes, a fluid view of reality and of networks. It requires no representation of the network to function: it gets its strength from temporary links between people that disappear as soon as they are created. These ad-hoc connections do not necessarily have to correspond to real-life links between individuals; messages and data can transfer based on physical proximity instead of social relationship. People can therefore remain who they are without having to necessarily change their behavior to join the network. By displacing stabilizing of the network, Fluid Nexus works to redistribute power over network individuation and protocol to those often seen as other, providing a counter to centralized control of often-State-run infrastructure.

Fluid Nexus could of course be re-appropriated by the State for their own purposes, thereby reestablishing stabilized networks. However, we should not see the application as a kind of general solution, but rather a tactical move in a continual cat-and-mouse game. We have to regularly respond to moves of stabilization with counter-moves of fluidity and destabilization. The critiques of networks outlined earlier suggest a way of conceptualizing how discourse about networks directly transforms into questions of ontological politics that can consequently be mapped into operational questions of technology.

References omitted for brevity. Text, video, images, and source code for Fluid Nexus can be found at http://fluidnexus.net.

Project Time Revisited: Thoughts on Skin Therapy, Urban Planning and Singaporean Angst

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In *Project Time*, A Theatre of Music,[1] we examined 'time' as the domain where the old and the new coexist in Singapore, articulated through the meeting of Indian and Chinese drumming with interactive computer sound transformation. It examines three perspectives: chronological time, through-time and outside time. A three-pronged metaphor relating skin, urbanism and immortality is proposed as a dissection tool to discuss the individual's response to physical change, a society's attitude towards change and depersonalised memory's way of dealing with experience.

The most visual physical trace of an individual's relation to time lies in the ageing skin. The process is accentuated, paradoxically, by the obsession of wishing to reverse irreversible time by seeking ways to appear younger, live longer and stay healthy. This urge of the individual is cunningly manipulated by the commercialised cosmetic world of skin creams and face lifts. Kundera writes in *Slowness*:[2]

> "[The] word 'imagology' finally lets us put under one roof something that goes by so many names: advertising campaign managers, designers who devise the shape of everything from cars to gym equipment… stars dictating the norms of physical beauty that all branches of imagology obey."

Underlying consciousness and unconsciousness of daily life is our reliance on the exterior; an image based on a notion of beauty shaped by the advertising media. The relationship an individual has with her appearance is similar to society's relationship to urbanism. As pointed out by Koolhaas,[3] Singaporeans' relationship with their physical surroundings can be exemplified by the land — and cityscapes of the island having been the object of drastic and conscious plastic surgery over more than four decades of 'urban renewal' programs, seen as 'nation building'. Conscious in the way of ringing the centre of the island — the rain forest is one of the world's ecological treasures — and drastic in the speed in which newer buildings replace older. The former preserves the identity of the physical spirit of the society and the latter suggests a mentality, the attitude that new material is always better than the old.

Herein lies fundmental questions: What is being displaced and eroded when the process of tearing down 'old' buidings to be replaced by a 'new' building? What happens when the replacement becomes a perpetual momentum? Is 'urban renewal' a renewal of the old or through the new? What is the culture of immediate gratification from new physical things doing to us? Memory lives outside time. Is time the sensation when we see a change? Is time the moment when we remember? Or is time the speed of forgetting?

Overlaps and congruencies between these perspectives on skin, urbanism and memory are explored in *Project Time* through juxtaposition of text and music quotes. There are four actors-performers, who vocalise and play drums and electronics. The narrative perspective is coloured by real-time sound transformations of their voices. The performers speak and deliver the text while playing on their instruments. These live sounds of the voices and drumming are in turn manipulated digitally. Koh's libretto is a collage of texts by Koolhaas, Kundera, Lee Kuan Yew[4] and commercials. Three brief examples illustrate intentions and processes relevant to the metaphors discussed above.

The first is a dramatic uncovering of a sail ("*take off that skin!*"), which marks a tonic accent in the dramaturgy. Human skin is an exterior similar to the 'skin' of urbanism, which, when stripped off, exposes society's core spirit.

The second is a dialogue of rhythmic patterns, vocalised and played by drummers. The salient feature shared by both drum languages is their onomatopoetic character. The Chinese biangu drummer recites a *luogu jin*, which the tabla player realises on his instrument, before linking it up to a bol, to which the biangu responds. The process intimately problematises issues central to a polyglot cultural landscape ("*We did not have a common language… we did not speak dha-dinh-dinh-dah!*").

The third example shows how text and music interact by means of real-time sound treatment. The prosody of a voice ("*greening raised the morale of people and gave them pride in their surroundings*") is shaped by the biangu drum's amplitude.

What has changed in Singapore since 2001? Would we deal with the topic of Singaporean Angst — a materially motivated spirit of life — in the same fashion today? Rethinking the context of Project Time has provoked surprisingly consistent reactions. The rampant proliferations of the spa industry, the property developers, the integrated resorts and so forth only strengthen the metaphors around which the piece was built. The state of perpectual momemtum, relentlessly dominant, still rings in an exclamatory computer voice solo quoting Lee[5]: "*Being first is second nature! Being rooted in the cultures of our ancestors! Being a unique ecology of the contemporary!*…" in which the difference between political and marketing slogans is minimal.

The central question, however, is as loud as silence is expensive: What is being constructed? What is being eroded in the process of 'renewal'? We negotiate spaces and expressions between the private and public, new and old, fast and slow in our memories. These negotiations create tension as well as a dynamic we can choose to change, to forget, to remember or change again. Herein lies our imprint of transcending time where the notion of immortality lives. Borrowing lines from Koolhaas and Kundera,[6] *Project Time* ends in a solemn exchange between three voices: the first a superego, the second a good citizen, the third a ghost of memory:

> computer: If there is chaos, it is authored chaos… it is designed ugliness… it is willed absurdity.
>
> electronist: What gives it power is our retrospective knowledge of its effects.
>
> computer: The degree of slowness is directly proportional to the intensity of memory; the degree of speed is directly proportional to the intensity of forgetting. There is no greater horror, no greater punishment than turning a second into eternity… Imagologues create systems of ideals and anti-ideals… which influence our behaviour, our political opinions and aesthetic tastes, the colour of carpets and the selection of books…. There is a certain part of all of us that lives outside time. Perhaps we become aware of our age only at exceptional moments and most of the time we are ageless.

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On the Language of Abstract Animation

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Introduction

This paper documents a part of a research project which aims to contribute towards the notion of an *aesthetic language system* being applied to *abstract animation works*. This investigation focuses on theoretical and *philosophical* aspects of a *syntactical system* combining elements of different *media grammars*,[1] formed by a vocabulary of *tones, colors, shapes* and *forms*, as a system of reference following *semantic rules*, by which we wish to interpret the "*language*" of abstract animation, as used for both *artistic practice* and the *production of meaning* in the process of perceiving abstract animation works.[2] According to Arnheim, "The artist conceives and forms his image of the world through directly perceivable sensory qualities, such as colors, shapes, sounds, movements. […] however, an artistic connection of visual and auditory phenomena is not possible. […] Such a connection can be made only at […] the level of the so-called expressive qualities. […]."

Furthermore, in the context of media art history, it could be suggested that abstract animation language is an aesthetic system that is evolving into *new media genres*.[3] Arnheim first raised this basic aesthetic question of "how various media can be combined in a work of art".[4] The word "intermedia" appeared in the writings of Coleridge in 1812 to define works which fall conceptually between media that are already known. Often the creation of *new media* is done by fusing old ones. This formal fusion between media was very common in the late 1950s and early 1960s.[5] The notion of "new media" is currently used to represent a convergence of two separate historical trajectories: computing and media technologies.[6] Our hypothesis conceptualizes the above theoretical schema at a *phylogenesis-ontogenesis model*, as used for *literacy theory*.[7]

Towards an evolutionary theory of abstract animation language

Abstract animated film has its own language that gradually evolved from abstract painting.[8] The origin of abstract animation as an art form can be traced to the notion of *correspondences of the arts*, common in 19th century symbolic poetry and expressionist paintings.[9] Such correspondences appear in the abstract paintings and writings of Kandinsky and Klee,[10] who had a similar vision of an abstract visual language, relating to music. Kandinsky used color to associate tone with timbre, hue with pitch, and saturation with the volume of sound. Klee also developed a systematic approach linking musical counterpoint to color gradation and harmonic structure to color composition.[11]

The aesthetic experience afforded by these *systems of correspondences*, could be somehow related to *synaesthesia*, a neurological condition in which stimulation of one sensory modality triggers involuntary sensation felt by another.[12] One essential ability that has been suggested by cognitive scientists as a prerequisite to language has been termed "cross-modal abstraction".[13] It has also been suggested that through the process of

natural selection, the gene that causes synaesthesia has been preserved, because it is responsible for the ability of language formation in the human brain.[14]

As the 20th century progressed, film enabled painters, who had been confined to merely suggesting motion and rhythm in static images, to create flowing movements and rhythmic schemes that unfolded over time, thereby drawing visual art closer to musical composition.[15] Survage was the first known artist to design a work of abstract animation. He created sequences of abstract paintings which he called "Colored Rhythms", and patented what he considered to be a new art form. Eggeling with *Symphonie Diagonal* (1917) and Richter with *Rhythmus* were probably the first two painters who made films out of abstract moving images, along with Ruttmann and Fischinger. Eggeling was a visionary that saw in music "*a logical basis for composition within an abstract medium and that visual form could similarly be susceptible to laws of composition, at the same time providing the basis of a universal language*". [16]

Such abstract audiovisual works could be categorized into two directions, with regards to the way that artists approach the correspondence between the audio and visual *logos*: a) as an attempt to visualize a pre-existing musical composition or b) as an attempt to build a more balanced audiovisual synthesis, by setting rules according to which specific elements and characteristics of the audio and visual aspects of the composition correspond. Interestingly, similar categorizations may stand when analyzing several of today's computer-generated abstract audiovisual compositions, like the works of Carsten Nikolai, Ryoji Ikeda, Semiconductor and others.

According to Goodman, Art forms an *aesthetic language system*.[17] Most obvious examples of such systems are scores and notation systems. Music is considered to be closer to linguistics[18] than visual art because it is abstract, while visual art is most commonly representational. Narrative film is considered to have a language of its own.[19] According to the theory of *film analysis*, each *frame* of the film take, every different camera *angle*, is a structural element that can be considered as a *syntactical proportion* of a *phrase* or *sentence* in order to communicate meaning. Abstract moving images, however, may express and convey meaning in a different way than narrative film genres, since they too follow a course of structure, but the language of abstract animation tends to become a score or *notation system itself*. In 1969, Sitney suggested that *Structural Film* is *a* type of film not open for interpretation to the viewer, drawing his/her attention on the primary material it is made of: *Film as Film*. Absolute film or "Film as Film" can only be perceived as a Kantian object per se.[20]

"Begone Dull Care": A case study of the analysis of an abstract animated work

In terms of methodology, abstract animation works can be analyzed in order to identify such *linguistic elements* and more specifically, to identify possible correspondences between abstract moving images and certain musical parameters such as rhythm, timbre and tonality. As a case study, we present an analysis of *Begone Dull Care* (1949) by Norman McLaren. This film is a carefully structured work in which McLaren experiments with film's basic elements: lines, movement, colour, texture and visual rhythm. In this film, McLaren used the technique of cameraless animation[21] and painted onto the blank film stock directly, added dyes, and then scratched away at the surface, etching in glyphs and abstract lines. Each frame was scratched directly onto the film in order to be in perfect synch with the pre-recorded soundtrack.[22]

In *Begone Dull Care*, McLaren achieves a synchronization of the audio/visual channels of the composition. The film adapts to the score's rhythm and as the soundtrack's rhythm changes, more complex visual patterns emerge. Certain shapes, textures and colors correspond with different sections of the score. The complexity of the visual motifs increases proportionally with the intensity of the music.

All these *structural elements* of media grammar, as analyzed in abstract animation works, may form a *syntactical system* coming from different sensory modalities, which, when combined, contribute to what we suggest as *an aesthetic language system*. This analogy from music to visual imagery describes the original concept of abstract animators who use moving images as pure forms (points, lines, planes) and arrange them in time and space.

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Making Art as Commercial Products: An Ongoing Challenge of Device Art

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Introduction

Could a person produce a funny gadget as a commercial product and still be considered a serious artist? The answer was a big YES in Japan, among those who voted online to select Japan's best media artists for the 10th anniversary of Japan Media Arts Festival in 2006. Maywa Denki (which means Maywa Electric Company), conceived and performed by Nobumichi Tosa, won the honor of being voted the most appreciated media artist today. Tosa developed a series of machines and gadgets such as robotic musical instruments, puppets, and techno jewelries from fish-bone shaped cell phone straps (which is a miniature of his "Na-Code", a dangerously spiky electric cable) to large-scale computer controlled systems. He uses these music instruments, or "products" (since he is supposed to be the "CEO" of an old style company that produces electric and electronic parts and appliances in small scale), for performances and exhibitions, but small-scale items are also sold online and offline. Even Maywa workers' uniforms with the company logos are commercially available. When Maywa Denki's solo exhibition took place at InterCommunication Center in Tokyo, not only Maywa Denki "employees" but also museum guides wore the uniform, as well as some visitors, creating an interesting situation in which exhibitors and visitors were no longer distinguishable. His performances, which are called "product demonstrations", are extremely entertaining and always full with some in the audience wearing Maywa uniforms and wearable gadgets, which clearly reflects connection with Japanese popular culture such as "costume play". Is this convergence of art, design, entertainment and popular culture, as well as application of both low and high technology, a particularly Japanese phenomenon, or could it be an early example of what we will see worldwide?

Although Tosa's performances and products since 1993 have been funny and entertaining, he is an artist with strong concepts and social aspects. By staging as a small firm owner with a limited number of employees, inventing and producing small machines as he struggles in a society controlled by giant companies, he places multiple layers of meanings in his works. But the top layer is always playful.

Tosa is not the only artist who creates works in a playful manner no matter how serious the underlying subject is. Such artists' playfulness is particularly visible in the way they deal with technology. Instead of criticizing technology from a negative perspective, they present it in an innovative and amusing way. And this playfulness is a key factor in commercializing their artworks. But then, why is mass-producing artwork for sale important to them?

Fast developing digital media technology has been changing our society and art activities. The "mass consumption" society we live in is supported by digital technology that allows limitless number of copies that are identical to the "original". Although digital technology has deeply influenced our audiovisual culture, its impact is limited in the art world where authenticity of an artwork in physical format remains a basic issue. Reproduction technologies are essential to certain art forms such as sculpture, print and photography; they are used to produce "limited edition" works for museums, galleries and collectors in order to keep the authenticity of "original" artworks. However, the distinction between "original" and "copy" is no longer clear in a digital media society. The traditional paradigm of art itself is in question.

This paper focuses on activities by artists who consciously create artworks as commercial products available outside museum shops, in relation to Device Art. The aim is to analyze the purposes and reasons why professional artists create their works as commercial products and how their choice is related to other features of their works in order to understand what commercializing artworks means today.

Device art — the concept

Device Art is a concept derived from digital media art and technology scenes in Japan in recent years. As Japanese media artworks become internationally known,

their features such as playfulness, hardware-based original interface design, and open interaction are widely observed in contrast to typical works from the West. The tendency is particularly visible in the case of interactive art. While Japanese artists are often criticized in the West for making their works too entertaining without clearly showing a critical attitude toward technology, analyzing and understanding the underlying reason is needed not only to understand these artworks but also to achieve an alternative viewpoint of what art means today. Thus the Device Art Project was launched in Fall 2005 by a group of artists and researchers to investigate what the abovementioned approach could bring to both media art and technology.

In Device Art, an artwork is realized in a form of device, the device becoming the content itself. This feature allows small-scale works to be published as commercial products free of maintenance. An artistic concept is realized by designing a system or a gadget that would allow a user to achieve a certain experience of what media and media technology mean to us today. Using both latest and everyday technologies and materials, these works playfully visualize the media environment we live in from different angles. The concept reflects Japanese cultural traditions in many ways, including appreciation of refined tools and materials, love for technology, acceptance of playfulness, absence of clear distinctions between art, design and entertainment, among other issues. At the same time it is part of an international phenomenon that questions boundaries between art and its related fields including low-tech, do-it-yourself, and major art exhibitions in the past few years concerning the convergence of art, design, and architecture. Questioning the validity of the traditional value system in art supported by strategies such as "limited edition" or "signed by artist" means also questioning the boundary between art and design.

Artists producing commercial products

Besides Tosa, Kazuhiko Hachiya and Ryota Kuwakubo are Device Art Project members who have produced their works as commercial products. Hachiya's "ThanksTail" is a mechanical doggy tail to be attached to a car roof, with which the driver can tell "thanks" or "sorry" to other drivers by wagging it remotely. The artist has a long history of producing artworks questioning what communication means to us, including net projects and the internationally exhibited "Inter DisCommunication Machine". For him, exhibiting "ThanksTail" at a gallery space was not the goal. The concept was to offer a functional platform for drivers to discover and enjoy a new communication language. Therefore the item had to be mass produced and commercialized, sold at car accessory shops for the general public. This means the product has to be professionally manufactured in order to meet legal standards for safety and to be sold through a regular distribution channel. Since an artist cannot "mass" produce, sell, and maintain such products, partnership with commercial firms was the key to realize the project.

In the case of Toshio Iwai's Tennorion, the artist wanted to offer a device that any user could enjoy to play one's own music and image. It is a logical development of works the artist has developed over the years on both his original and commercially available platforms such as the cell phone or game machine. The only way to mass produce, distribute and maintain the product is to collaborate with a commercial firm. Even at the prototyping stage, collaboration with engineers is required to create a working model for the real production process. To be marketed to the general public through a commercial channel, a product should be attractive. This is why playfulness plays an important role in bringing an artwork to the public through commercial channels. While works exhibited at museums and galleries could be seen only by a limited number of people who already have the intention to "see art", these artworks, or art products, have the potential to reach a wider audience. In a society where digital media has become the most important channel of communication for many, these artists attempt to respond to reality, challenging the existing paradigm of art.

Cursory Speculations on HPI (Human Plant Interaction)

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> "There are in all extensions of human power, or additions to human knowledge, various collateral influences, besides the main and primary object attained." A.A.L

With the understanding that we are a part of an interconnected and interdependent planetary eco-system, contemporary human culture moves slowly from a culture of consumption and segregation to a culture of participation, integration and generation. Our technological inquiry, into the minutiae of molecules, atoms and bits, is reaching the limits of rational reductionism and rediscovering the robust beauty of growth and interdependence in complex systems — from food to fabrics, from genetics to global networks. We are beginning to see design which aims to produce and recycle, rather than relentlessly consume and waste. We suggest that these changes in contemporary cultures, economies and technologies are beginning to resonate with the characteristics of our close neighbours in the domain of eukarya — The Plants.

As we move beyond a world dominated by information technology into an era in which the biological world is beginning to penetrate the "technosphere", different modes of interaction may be required. We propose that parallel to the field of HCI — Human Computer Interaction, we should explore the field of HPI — Human Plant Interaction. HPI explores the nature of surfaces and processes required to facilitate reciprocal interaction between humans and plants. Before HPI can become a mutually beneficial symbiosis, we need to ask ourselves why, where and how this two-way interface can be realised. What cognitive and social biases need to be overcome? Can we develop a generalisable approach to interfacing with the entire plant kingdom, or do we require localised interactions between different species, ecotopes or alkaloids? How do we bridge the differences of time and place on each side of human-plant interfaces? By rediscovering the value of humility, can humans learn how to become part of systems more complex, older and stranger than themselves?

Megatart's Stratagem — from rhizome to rainforest

> "Our present global crisis is more profound than any previous historical crises; hence our solutions must be equally drastic. I propose that we should adopt the plant as the organisational model for life in the 21st century, just as the computer seems to be the dominant mental/social model of the late 20th century, and the steam engine was the guiding image of the 19th century." (McKenna, 1992)

Over millennia of evolution, humans developed increasing mobility between places, avoiding environmental or social degradation by moving "away". On a cosmic scale, we are earth-bound organisms just as immobile as plants — there is no "away" for a globalised human society. As our economies and cultures operate on an increasingly planetary scale, current instabilities cannot be overcome by moving "away" — adaptation needs to come from within. By suggesting "plants as organisational models" McKenna underlines several urgent human needs — to understand the value of diversity and collaboration over monocultures of competition; to approach problem-solving through whole systems thinking, rather than pure reductionism; to redesign industry and economics to adopt more cyclical, "cradle to cradle" processes (McDonough, 2002). The rise of nanotechnology and a "global, atmosphere-based energy economy" can be completely in harmony with detoxifying the natural environment and preserving biodiversity, if we as a species are willing to take the risks of "re-establishing channels of direct communication with the planetary

Other, the mind behind nature" (McKenna, 1992). While McKenna's recommended lenses are the plant based psychedelic tryptamines[1] (uncannily similar in structure to some human neurotransmitters),[2] we suggest that a symbiotic HPI provides a technological analogue and as such, is simultaneously more feasible, acceptable and perhaps insidious to a civilisation reinforced by global Information and Communication Technology. These technologies appear at the "surface", an area of contact between the dissimilar realms of humans and machines. To operate on this surface, HCI reduces the range of human expressions in exchange for enhancing those actions in reasonably specific, agreed upon ways. Thus HCI is insular, autistic and often mute. Near future, bio- and eco-technology suggest the possibility for HPI to act at different scales with the living systems surrounding us, working with patterns, gradients and potentials. From rhizome to rainforest. From Deleuze & Guattari's "and . . . and . . . and. . ." of the rhizome, to the "and . . . and . . . and. . ." of the deeply interconnected, multivalent, multiplicit unity formed by a rainforest ecosystem. A "Pataecology", an ecological, biomimetic systems thinking, an ecology "superinduced upon metaphysics (...) extending as far beyond metaphysics as the latter extends beyond physics."[3] An ecology of imaginary solutions, inhabited by the plausible and improbable, as they pollinate or mutate, eating or being eaten.

Cellular communications — chemical concurrency

It is important to realise that HPI may not be able emerge without a technological substrate, a mediation layer analogous to a cell membrane, or language interpreter. For such technologies to become possible, HCI specifically and computing in general, needs a radical shift away from serial, singular, fragile systems to embrace the distributed, concurrent, robust techniques nature utilises. We are seeing the beginnings of such a departure — with theories from biologically inspired computing,[4] or in the more practical domain languages such as Erlang.[5]

Aside from "archaic" ethnobotanical experiments, what are the ways to establish a two-way interface for communication between humans and plants? The notions of space, time, movement and persistence differ greatly between the human and botanical realms. Where human progress is often described as linear, the progression of plants is cyclical, seasonal. On a larger scale, humans and plants both occupy interdependent regional habitats, which temper and define them. In order to interface with plants, humans would need to go through a gradual time-unbinding,[6] a relinquishing of the short-term, short-lived, incremental and individualistic advances, for slower, collective cycles of growth and decay. Successful time-unbinding may be enough to allow communication with plants about our divergent perceptions of space and movement, but would humans be able to grasp what it is like to be a forest, consisting of billions of roots and rhizomes, trillions of leaves, stems, branches, flowers and insects? Would our thinking become more reticulate, our logic less linear? Would these communications lead to a more integrated, holistic consciousness?

The vegetable mind — from Viriditas to Thalience

> "Thalience is an attempt to give nature a voice without that voice being ours in disguise. It is the only way for an artificial intelligence to be grounded in a self-identity that is truly independent of its creator's." *The Hamburg Manifesto* in *Ventus*

Attempting communication with plants would require humans to grasp the logic of the "vegetable mind". At present, we don't even know where to begin, but a plant consciousness would no doubt be considered alien, unable to be perceived unassisted. The field of Computer Science has developed a variety of methods[7] to determine the nature of machine consciousness somewhat akin to our own. However, as Schroeder notes, human sentience

is not the only possible expression of consciousness, so why measure sentience by how well it mirrors humans? Nature, inspired by Thalia (the flourishing muse) may contain a myriad of possible consciousnesses, operating according to their own, internally consistent, externally incomprehensible logic — "Thalience" (Schroeder, 2007).

Long before Schroeder, Hildegard von Bingen, a naturalist, poet, composer and mystic in the habit of a Benedictine nun, spoke of an incomprehensible greenness, a consciousness permeating all eco-systems. Hildegard's "Viriditas" is the vigour that maintains balance and provides an indefinite freshness. Humans, according to the same vision, were the most recently arrived, dependent on the world as a whole — yet being stewards of this balance, able to comprehend the importance of their task and "(...) also honour the stability of the world: the orbits of the Sun and the Moon, winds and air, earth and water... We have no other foothold."

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1 In particular; DMT (N,N-dimethyltryptamine), Psilocybin (4-Phosphoraloxy-N, N-DMT) and 5-Methoxy-DMT as contained in Virola or Ayahuasca preparations.

2 cf. Serotonin (5-Hydroxytryptamine) or Melatonin (5-Methoxy-N-acetyltryptamine)

3 From Alfred Jarry's description of Pataphysics

4 Amorphous Computing (Beal, 2004) or Membrane Computing (Paun, 2004) for example.

5 Information about Erlang can be found at http://erlang.org/faq/faq.html

6 In the 'General Semantics' proposed by Alfred Korzybski, 'time binding' differentiates human activity from the 'space binding' and 'energy binding' activities which define animals and plants respectively. (Korzybski, 1995)

7 The most well known being the "Turing Test", with its various variants

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Condensation Revisited
A Lecture on Pigments:3

Colm Lally
Verina Gfader

At ISEA Verina Gfader and Colm Lally presented "A Lecture on Pigments". This lecture in Singapore is the third in an open-ended series that took place over two years. The first was performed at the Academy of Fine Arts in Vienna on 11 April 08. The second was performed at Goldsmiths College in London on 15 May 08. Within the context and temporary community of ISEA, the structuring element of 'the pigment' (as materiality and sign) is redeemed and taken into another frame, into the economy of an electronic art symposium. Throughout their research, Gfader and Lally maintain interwoven strands of thought that come together in the form of a collaged text and a lecture.

The Document, Academy of Fine Arts Vienna, 12 April 08.

vg:

Proceeding to multiply the same lecture, but adjusting it slightly for each environment, and also adding, taking out, or "subtracting" (Alain Badiou, 2007) content, the idea of strategic walking, proposed in relation to the theme of Locating Media, is less related to our actual walking, but rather to the type and kind of institutions and communities in which we carry out the lecturing. That means the project provocatively addresses the "path of the artists/makers in their carrier" (if there is any) — and the obstacles and procedures of submitting, being invited, not being invited, being ex- or included in a particular discourse, and a public: being able to operate in a circuit or not. In this enfolded way of giving a fine art lecture in a media type environment, there also appear questions of failure, the virus, contamination, and further the question of labour: learning a skill to perhaps become an expert.

My part of the lecture begins with thinking of the pigment in relation to the *contours* of location. Among questions of substance, silhouette and media surfaces, at stake is the location of a work, how it inserts itself into an economy — is there a co-existence of different economies? In Hélio Oiticica's work *Cosmococas* (1973–), for example, cocaine is transformed into an artistic material, its structure comparable to the painter's pigment. As a work, or image that operates against instrumentalisation and the possibility of being exhibited in public, the force of it was precisely being excluded from the art circuit, to exist as its outline or contour only.

In "A Concise Lexicon of/for The Digital Commons," Raqs Media Collective (2007: 340) claims that, "There can be no excess of access". But the question is also: what does access imply, what are its consequences, aesthetically and politically? And, following Jacques Rancière (2006: 12-13, emphasis added), "*who* can have a share in what is common to the community based on what one does and on the time and space in which this activity is performed"? "[Aesthetics] . . . is a delimitation of spaces and times, of the visible and the invisible, of speech and noise, that simultaneously determines the

From: CØDEshop, E:vent, Nov 07.

place and the stakes of politics as a form of experience. Politics revolves around what is seen and what can be said about it, around who has the ability to see and the talent to speak, around the properties of spaces and the possibilities of time". And when Brian Holmes (2007: 37) suggests creating a strategy of an "oppositional device", he proposes to look for the creation of meaning of events or performances lying in the tension they establish with a form of power.

cl:

I present some thoughts on the relationship between the Document and the artists' pigment. The term *Document* here is a place-holder for that which has been established, or located. Furnished with references and citations, in support of, and indeed constitutive of the institution/state of, for example, (art)history. The term *pigment* on the opposite relates to the substance of artistic agency, and the art movement. Within the context of Locating Media I describe art movement as the relentless dispersal of a counter-constitution undermining that which has been, or can be located, or is constituent. This art movement is grounded in Aristotle's notion that "movement is an unfinished, unaccomplished act, without telos, which means that movement keeps an essential relation with a privation, an absence of telos. The movement is always constitutively the relation with its lack, its absence of an end…". I propose that the contrapositions of the locatability of the document, and the forever moving operations of art maintain an antagonistic dynamic in which the art movement continuously threatens to erase

the document while simultaneously risking erasure by documentation, i.e. institutionalisation.

Understood in relation to Christian Capurro's work, *Another Misspent Portrait of Etienne de Silhouette* (1999-2004), this dynamic refers to the Document as place-holder. *Another Misspent Portrait of Etienne de Silhouette* consists of a 246-page *Vogue Hommes*, September 1986, #92, erased by hand by 250 people. Ranging in age between 8 and 80, each person was asked to write in pencil on the page both the time it took them to erase the page — ranging from 9 minutes to just beyond 3.5 hours — and whatever monetary value, translated into an hourly rate, they currently received for their time. Consequently, each page has a nominal value based on the sum of these indices. By its erasure the magazine transforms into a kind of palimpsest, a place-holder for a new taking-place: it is a relocating of the (media) object by the erasure of the magazine's pigment (in this case the surface of extreme commodification, a document of a different kind). Accompanied by a series of lectures by experts and cultural theorists, the work further underlines the idea of reactivated pigments and potential new art movements and meanings by a proliferation of its discourse.

The erasure of the document and reactivation of pigment is also operative in Michael Landy's performative work, *Breakdown* (2001). *Breakdown* was an installation/ event in which Landy destroyed everything he owned, all 7,227 of his belongings, in a systematic, meticulous manner. The result of his action consisted of more than 5.75 tonnes of material, which was not archived,

Fluff, Banff, Alberta, June 07.

preserved or exhibited, or even sent to market. Rather, it was deposited in landfill sites. In different ways, Landy's *Breakdown* and Capurro's *Another Misspent Portrait of Etienne Silhouette* question the relationship between the locatable document and the activated pigment — the place-holder and the taking-place. The taking-place replaces the place-holder. That which was located is now relocated.

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Peau d'Âne: Where Wearables Meet Fairy Tales

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Abstract

This presentation looks at a work entitled "Peau d'Âne" which coalesces fairy tales, three meteorologically modulated dresses and wearable technology. Inspired by the Charles Perrault's fairy tale, "Donkey Skin", this project aims to incarnate three "impossible" dresses from the story in material form. The dresses take on the unique and mutable characteristics of the sky, moon and sun, translating these natural qualities into real-time and location-specific actuated garments to be used in a performance context.

Introduction

In the Charles Perrault fairy tale "Peau d'Âne", a young princess, whose kingdom's riches are dependent on a gold excreting donkey, orders the impossible — three dresses made of immaterial materials — from her doting stepfather to thwart marrying him. The first is to be made of the "sky" and should be as light and airy as the clouds. The second is to be made of "moonbeams" and should reflect the same lyrical intensity as the moon at night. The third, and last, is to be made of "sunlight" and should be as blinding and warm as the sun above.

Conceptual overview

This project is part of a body of research that focuses on relational and ubiquitous performance. Investigating historical performance-centric contexts and adapting new scenarios for wearable and sensing technologies, "Peau d'Âne" seeks to create a bridge between the symbolic percipience of fairy tales and current technological innovation. In particular, this project explores the potential for wearables to become agents of performativity.

Techno fashion

Technology is increasingly addressing our need to access information and maintain connectivity with others on a continuous basis. Bradley Quinn, on explaining why garments are positioned at the centre of technological and personal computing research, notes that:

Fashion, as an essential component of everyday life, provides the ideal means for information technologies to be constantly accessible and widely relied upon as they become indistinguishable from clothing."[3] As we negotiate an increasingly mobile lifestyle, technological research has been focused on creating multiple networks for communication along with new interfaces for accessing these networks. Reactive fashions integrating human-computer interfaces — fashion that can adapt and modulate depending on its environment or use — propose new and unique sets of social interactions. "Wearables" — microcomputers that can be worn on the body — and "smart" fabrics — responsive materials both hard and soft — can mediate this information between the self and the world. Examples of industry research in the field of wearables have centered on utilitarian

and entertainment applications such as: dynamic camouflage for military industry; biofeedback clothes to monitor the elderly or ill; and universal connectivity environments for 24/7 access to the Internet and entertainment media.

The "Peau d'Âne" project extrapolates wearable technologies' utilitarian drive to meditate on the potential for an aesthetic experience, symbolic imagery and data visualization. Translating climactic factors into active wearable displays, the "Peau d'Âne" project poetically embodies the chimerical fairy tale artifacts of a "sky", "moon", and "sun" dress via variegrated information displays. Lev Manovich coined the term "info-aesthetics" to describe a new culture of media arts actualized in the reconfiguring of information representation, dissemination, manipulation and analysis.[4] Looking at the industrial revolution's symbolic as well as material affect on modern art and society (motorcars, bridges, grain elevators, air travel), Manovich postulates that today's avant-garde is rooted in an historically analogous information/computer revolution. Technological presence in the everyday, and hence ready and proximal data access, has propelled distinct and innovative information interfaces, which have engendered new forms and meanings. Utilizing prevailing and emergent research on wearables, "Peau d'Âne" adapts technological innovations in the service of relational and ubiquitous performance where info-aesthetics are subsumed through a topical data anatomy of fairy tale costumes.

Technical overview

The three "Peau D'Âne" dresses were developed using parallel technologies expressed via different materials. A weather station culls live weather data transforming the dresses as they reflect the changing barometric characteristics of sky, moon and sun in real-time. Ambient weather variations are displayed by modulations in the dresses' designs/patterns and behaviours. Each dress is designed to respond to a certain set of weather fluctuations native to its particular meteorological characteristics as influenced by the sky, moon, or sun.

Three prototypes

Dress 1: "Sky"

The "Sky" dress displays a changing structure and movement based on flux in the wind velocity and direction. The dress is made of inflatable fabric pockets which expand to display real-time climactic changes. The greater the wind velocity, the larger the dress grows. Wind fluctuations create dress vibrations as the rhythm of the airflow in the dress is alternated (i.e. air will go in and out in a rhythmic fashion).

Dress 2: "Moon"

The "Moon" dress displays changing color patterns based on the 28-day cycle of the moon. These subtle transformations are made utilizing resistive heating in combination with thermochromic plastisol paints. Thermochromic paint is heat-sensitive, changing from one color state to another (or from opaque to transparent) when

exposed to a heat source. The "Moonbeam" dress is embroidered with conductive thread, which is slightly heated in order to trigger responses in the paint and thus represent the moon cycle as it appears and disappears. As the moon transforms from a small sliver to a full globe to a small sliver again, the dress' colours and patterns follow suit.

Dress 3: "Sun"
The "Sun" dress displays light patterns based on changes in the sun. The dress is constructed with an embroidered design of LEDs (light emitting diodes) and conductive fabrics and threads. The LEDs are set alight based on UV and sun intensity readings. The greater the intensity of the sun, the brighter the dress glows, emulating the sun itself. The more UV rays outside, the more the dress' LEDs are animated. The changing patterns of the fully addressable LEDs also graphically represent solar radiation changes.

Relational and ubiquitous performance art

Performance art today re-emerges as an important artistic discipline fashioned in a parallel climate of increased societal changes engendered in no small part by technological evanescence in the everyday. The possibilities for performative presence in a ubiquitous media system can be imagined in contemporary models of social connectivity/networks suggested in performance art.

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Digital Strategies to Change the World (abridged)

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Introduction

> "Interactive technology is one of the hot concepts of the 1990s. Advertisers and entrepreneurs are effectively exploiting its allure to entice consumers to buy products and investors to invest in speculative ventures. The media are hyping the concept to capture readers and viewers."
>
> (Saltz, 1997, p. 117)

This paragraph is the starter of David Saltz's paper "The Art of Interaction" and it establishes a good understanding of the three key words in Digital Media, being *interactivity*, *performativity* and *computability*. Saltz raised the question that basically occupied my mind in different disguises:"[I]*s interactive computer art nothing more than new technology tacked onto old art forms?*" (Saltz, 1997, p. 117). My attention was drawn towards a more profound understanding of the spirit of innovation surrounding Digital Media and evolving questions. If there is something new, what is it? Can it help us to change the world?

We all want to change the world

The book "*Digital Media Revisited*" contains a paper by computer games researcher Espen Aarseth, called "We All Want to Change the World: The Ideology of Innovation in Digital Media". Aarseth explores Saltz' thesis from another angle and as promised he asks about the "new" in Digital Media. But it was not due to this argumentation that this paper got most of my attention, but because of the first part of its heading: "We all want to change the world".

Like Saltz, Aarseth also builds his article on the clarification of three phenomena, as he calls them, namely *interactivity*, *hypertext* and *virtuality*. He criticizes especially the usage of the first concept being a simple "computer salesman rhetoric". Already in his PhD thesis "*Cybertext — Perspectives on Ergodic Literature*" (1997), Aarseth suggests expressions like 'participation', 'play' or 'use' instead of the word *interaction.* In his paper from 2003, he points out that interactivity is a "pseudoscientific" position that scholars try to save and to imbue with "conceptual meaning". So should the word be abandoned or at least be used more carefully?

Aarseth continues with the concept of *hypertext* and acknowledges it to be an overestimated dream. He proceeds to examine *virtuality*, and reveals critically the same weakness as with *interactivity* and *hypertext*. Instead of lamenting about the easy defeat of his last "phenomenon", Aarseth suggests looking closely at "*those systems that are dynamic representations of an artificial world. … They could be called simulations, but sometimes there exists no real counterpart that is being simulated* ..." (Aarseth, 2003, p. 431).

Compared to other approaches to *simulation*, Aarseth here clearly distinguishes his point of view, being positive and optimistic, from Jean Baudrillard's apocalyptic approach. Baudrillard used the word "simulacrum" to describe "media's *evil spirit of simulation*" and concludes: "*The coming of the virtual is itself our apocalypse, and it deprives us of the real event of the apocalypse. …*" (as cited in Steve Dixon, 2007, pp. 135). But Aarseth emphasizes the affirmative aspects and hopes, this concept might hold for our future and believes that *virtuality* as simulation could change the ways we learn and think tremendously. He chose to opt for the concept of *simulation* that works on our improvement of reality rather than the design of new alternatives. Aarseth concludes that the augmentation of the term *virtuality* can help us understand how computer technology is offering something *new* to our human discourse and could be a chance to change our world for the better.

The artist's choice

As academics try to find their very own way to change the world by fighting ideological battles on the meaning of words and concepts, I stumbled over an artist, who

deals practically with the hassle of life and propagates solutions for some of the "techniques" Digital Media promotes.

Kristin Lucas is one of the rare artists, whose work and life really seems to be devoted to art, not in an artificial sense, but in a very natural way. For instance, as a concept, she claims to be able to receive electromagnetic waves. By retaining this attitude, she can easily capture her audience into a *new virtual world*, being faced with difficulties similar to our reality, but somehow different. She alienates herself and her characters in her works, so it is easier for us, the audience, to believe she would be in an alternative world, but in fact, she is not. The candidness Kristin Lucas admits herself to develop in her work by facing media stars in a *virtual world* is a very ironic strategy to deal with mediatization. If we cannot beat the fake world of mass media and its inhabitants in front of the TV, then we have to find a battle ground to finally succeed. Kristin Lucas already did.

Her works deal with performative aspects as well as interactive facets, but mostly with the concept of *virtuality*. Lucas' work hints at the "new" in Digital Media and she consequently investigates the boundaries of the "new" technologies and their aftermath. By recreating real life environments (air port waiting hall, hospital waiting room…), Lucas evokes a strange *virtual world*, elucidating our own world and thus producing a process of thinking about our daily life. Again, this *simulation* is not about creating an alternative world, but it aims to clarify our own daily environment.

Eternally artists have tried to confront their audience with the essence of their abstracted experience and perception on our world, hidden by their work in abstruse universes and signs. Recurrently they use mechanisms of hiding and covering reality in order to represent a better understandable artificial world being easier acceptable by us, the audience. The work of Kristin Lucas offers a distinctive clue to showcase why Digital Media and its predecessors offer a great chance of attaining a wide audience by propagating a grasp of our world and asking for strategies to deal with it. Lucas' work offered me a conceivable idea of how the concept of *virtuality* could grow hope for our world to change in a down-to-earth practice.

Conclusion

I started to search for strategies to change the world and I will end by finding the solution in the well-known idea of *simulation*. Once more, we discover its possibility and potential thanks to the growing computing power and the possibility of endless refinement. One concern is left, after all. If *simulations* can change the world, who creates them? What ideologies are hidden in the personalities of the designers? Should we not establish some moral guidelines for *virtuality* and its derivatives, or at least be more aware of the origin and intention?

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Generative System for the Synthesis of Audiovisual Narrative

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Introduction

Narratives supported by hypermedia systems adhere to a series of conventions that render them readable. However, we cannot suggest that a particular writing system entailing grammar and syntax, that could totally condition the creation of digital hypermedia systems, has so far been established. For the time being it would be quite hard to create an analytic and strict writing code in compliance with a linguistics model.

It is suggested that a language of narrative that stems from representation through moving images and is supported by computers can be formed via the combining of existing theories of cinematic language with theories that propose reconsideration or even change-over of conventional forms of narrative.[1] Becoming familiar with the grammar and syntax of cinematic language constitutes the first stage of reading, which is essential for conceiving and further comprehending the message communicated through new media. A person may watch the input and output of information between her and the computer, through a monitor or a projector, which constitutes the visualization field of moving images, accompanied by sound. The projected image follows, to a great extent, the visual and semiotic conventions already known to us, originally from cinema and later from television.

This paper investigates whether individual video fragments belonging to a database may be linked into numerous different successions in order to satisfy fitness criteria defined by the user. The aim is to create optimum sequences in accordance to specific requirements, instead of coming up with a closed predetermined unique sequence, as it is traditionally done by directors.

Non linear narratives

With reference to interactive narratives and more specifically in the case of interactive cinema, there exists a "live" spectacle, the narrative and duration of which are activated, controlled and affected by the viewer. The latter does not remain a mere observer: she is simultaneously assigned the role of director, editor and often the lead actor. The computer provides the potential for an interaction process.

Apart from interaction itself, the source of other elements of an interactive artifact, namely the shots and the montage, relate to a certain extent to conventional cinema. Interactive artifacts are hybrid systems constructed by directors as far as their contents and mechanisms are concerned.

New media are still using the cinematic language that recognizes the séquence as the structuring element of the audiovisual transmission system. Cinema differs from other narrative methods in that linear narrative evolves within time and space. The introduction of the time parameter in narrative has imposed a new writing method, able to establish a correlation amongst the protagonists, their surroundings, the story plot and time, via their representation through images and text.

The various potential forms of an interactive play are finite. The creator of the system is in position to forecast in advance the potential forms that the play may exhibit, as a result of interaction with the user. Even in cases when the system has been programmed to pick up an element over a group of elements at random, through the "random" command, it is easy to find all possible combinations that may be applied by the computing system, by means of the probability theory. The number of options for interaction and navigation, as well as the consequent results are predetermined by the system creator.

The computation system that is adequate for exploring evolution as a creative process, entailing any random and indefinite elements of nature and culture, shall be more effective if it operates upon a mechanism simulating natural evolution stages. The discipline that

attempts to simulate nature and living organisms in order to study and comprehend their mechanisms is Artificial Life (AL). Artificial Life is often depicted as an attempt to comprehend complex behaviors through simple rules.[2] The term AL was coined in 1989 by Christopher Langton, who defined it as "the study of man made systems exhibiting behaviors typical of natural living systems".[3] Genetic algorithms, which are based on Darwin's theory of evolution, constitute the core method applied to simulate biological genetics through digital computation.

Creating generative narrative

The creator organizes the database including the audiovisual materials that are to be used for the construction of the final product and also builds up the software mechanism, which will process the composition of the database constituent parts. In a "cinematic" work produced through genetic algorithms, the director's role is restricted to the shooting and organization of the footage as well as the creation and/or adaptation of the software mechanism of production. Editing is automatically conducted by the system. The role of the director is limited to the "organization" of material so that the computation system can begin and complete the process of narrative composition, without the need of

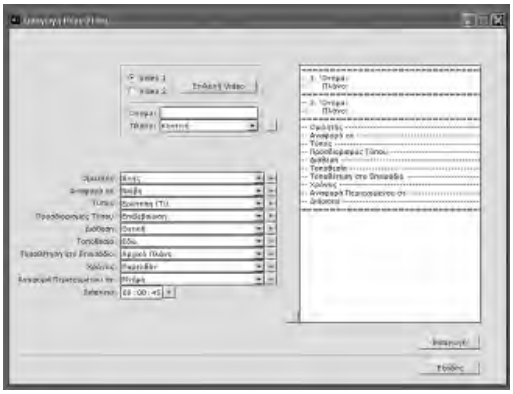

Figure 1: Inserting metadata to a video fragment

any further assistance by the creator. More precisely, the role of the "director" should be appointed to the system, for the creator/organizer provides it with the resources required for the execution of this task. (Figure 1)

The process of a cinematic film production usually results in the creation of a single product. No matter how many times it is screened, the film remains the same. In the system under study, the narrative products that could be built, as a result of the same work functioning, may be countless. Every time the viewer commands the system to start screening, it starts editing the database elements anew. Given the fact that the process is being conducted by genetic algorithms, which constantly alter the produced outcome, the composition of shot is unforeseeable and so is the number of the potential results. Due to the high complexity of the whole process, there is practically no chance of two outputs being the same.

Figure 2: Juxtaposition of video fragments

The presented system creates narratives starting by the juxtaposition of video fragments. Based on the phenomenon of semantic montage, the viewer attributes causality relationships to the succession of these fragmented micro-narrations which are seamlessly integrated in the sequence. (Figure 2)

In an evolutionary cinematic system, the creator functions as a driving force, a stimulus of a process that goes beyond the scope of the creator's imagination and may acquire unpredictable forms, in compliance with strict and specific rules. The designer of such a system examines the potential, the limitations and the power of the rules she establishes. She also monitors the formation of the rules she has set.

Systems that "imitate" natural selection processes for the evolution of an entity, set strict rules for the control of the evolutionary process. The results after each stage of evolution may be unpredictable for the constructor but the rules remain unaltered. Computations applied to the management of the genome by transforming it, altering the genotype or handling user interaction remain unaffected by the evolutionary processes.[4]

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1 Theories that illustrate such an approach were coined in the 1960s, such as Barthes' and Kristeva's, concerning the relationships between author–writing and reader–reading.

2 Adami C. 1998. *Introduction to Artificial Life.* Berlin: Springer-Verlag.

3 Langton C. 1989. <http://www.vieartificielle.com>.

4 Whitelaw M. 2004. "Metacreation Art and Artificial Life." The MIT Press, p. 220.

Low Cost Digital Lutherie

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Abstract

This paper shows the working prototype of a mixed-media musical instrument we named *Tecnocordio* and focuses in the different techniques used. By its creation we investigated some of the least expensive techniques in digital lutherie, in the hope that it could be of benefit not only to our future endeavors but also to other artists or institutions with a low budget.

Introduction

In recent years, we have witnessed the birth of a new breed of engineer-scientists-artists that use technology not only as consumers but also as creators, developing and crafting new tools for and ways of artistic production and performance, specifically new musical instruments have been created in a field known as digital lutherie [Jordá05], which can be seen as part of a broader one called new media art.

New media art describes a process where existing, new and emerging technology is used by artists to create works that explore new modes of artistic expression, ranging from conceptual to virtual art, through performance to installation art and involve new media in both how the work (or a component of the work) is conceived and created as well as the way in which it is presented to an audience [Art06].

Coincidentally, new tools have appeared the scene that aim to bridge the conceptual gap a more traditionally-oriented artist may face. A fertile field that implicitly assumes that the artist has the *means to the media*. No matter what the media is or how it fits into the art-production scene, she must be able to have access to it in the very first place.

This obvious necessity is often overseen, and many times the literature does not take it into account when talking about the democratization (of access or creation of information or art) that technology implies.

The Tecnocordio

The Tecnocordio was a mixed-media,[1] musical instrument created using inexpensive, obsolete and recycled technology. It was constructed with two main goals in mind: to test the expressive and functional capabilities of technological garbage, and to see if these capabilities were enough for us to create a musical instrument.

The sound making was resolved by using stepper motors to strung guitar strings attached to a resonant wood frame, and — as we restricted ourselves to use only the hardware we already had in the lab — all the computing power was obtained from one modest motherboard and processor (a 500 MHz Pentium III PC) and several much older mothers and processors (66 and 100 MHz 386).

The Tecnocordio adopted the form of a client-server system, where the server interpreted the inputs and sent orders to the clients (the older PCs) which, in turn, controlled the motors via their parallel port.

We also wanted to allow as much input techniques as possible, and we implemented control via MIDI, basic visual gestures (using cheap web-cams) and scripting.

The instrument itself consisted in a metallic structure (made out of recycled PC cases), which held the motherboards, the strings and the motors (these last two in a resonant wood frame). Each motherboard controlled four motors, being then able to play up to four strings.

MIDI control of the Tecnocordio was solved using the server's MIDI-in port. The server software translated some of the MIDI commands (only note-on and note-off were implemented) to the corresponding commands to be sent to a client.

If scripting were to be used for controlling, the user had access to the motors by using the mapping but also in direct form, being then able to write commands of the form playNote(A4), and playNote(IP, motor#).

It is worth noting that our implementation corresponds to a more general software architecture, where different inputs can be arbitrarily mapped onto different outputs. In that framework, linking MIDI-in to the Tecnocordio was only a matter of configuration.

It is also to note that although we fully implemented the architecture for the Tecnocordio, MIDI, scripting, software synthesizer, etc., the Tecnocordio itself never surpassed the prototype stage.

Low-cost crafting techniques

We believe that the main lesson to be extracted from this work is that one can create a new musical, physically-based, musical instrument with a little budget, and with just the most basic knowledge of electronics. It is our hope that this way of approaching the problem can be used by others to attempt more sophisticated endeavors.

We used stepper motors recycled from old 5"¼ diskette drives that fell to no use. As we had no programmable hardware (e.g. a PIC), we created our own hardware drivers for controlling them, by recycling both the needed chips *and* the PCB.

We also needed to use some chips (ULN03, 7486),[2] which can be found in many outdated hardware, and we happened to have them in the boards of the same diskette drives. To use them we de-soldered them using a paint-removing gun.

The next step was to create a circuit with these chips. Our choice was to turn to the leftovers of our de-soldering and to cut and paste the PCB: it is possible to craft connectors and circuit boards by cutting and soldering PCB from old boards. By de-soldering chips, cutting PCB and recycling motors we had our basic modular piece of the Tecnocordio.

Conclusions

By making emphasis on the low cost of the techniques, we aim to address the much overlooked socio-economical problem that many artists and institutions face.

Also, being able to –at least partially– recycle and reuse obsolete technology for specific (and often not very demanding of processing power) tasks can be a strong way of fighting against both the digital divide and the so called e-waste.

But one should not forget that there are many problems that do require state-of-the-art technology. We believe that recycled and new technology can coexist and collaborate via networking. For our instrument we set up a TCP/IP network over coaxial cable that allowed them to interact seamlessly, while at the same time letting us distribute physically the Tecnocordio: the different strings and components could be arbitrarily distant.

We do hope that this attitude towards technology can not only help to bridge the digital divide by providing new means of creation, but also be of help in the creation of new artistic languages that profit from the direct manipulation of low-level technology as a medium, and see themselves not as a copy of the modern digital language, but as an authentic, location-specific alternative.

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1 One important aspect of mixed-media musical instruments is to recover the role of the visual appearance of the instrument, something often lacking in all-digital musical instruments.

2 Datasheets in http://focus.ti.com/lit/ds/symlink/sn7486.pdf and http://www.datasheetcatalog.com/datasheets_pdf/U/L/N/2/ULN2003.shtml.

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[Art06] Arts, Australia Council for the. 2006. *Support for the Arts Handbook*, p. 109.

[Jordá05] Jordá, Sergi. 2005. *Digital Lutherie, Crafting musical computers for new musics', Ph.D. thesis*. Barcelona: Universitat Pompeu Fabra.

Active Matrix, a Serious Game to Play with Kandinsky's World

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From paintings to systems

We are now living in a world within which we communicate, act and re-act by the way of information technologies. We exchange words, images, sounds and transform them dynamically while moving our body and mind.

In the context of such a world that we now both experience and perceive as a changing, variable, and complex networked environment, it seems that painting is no longer a kind of system of representation that fits to depict our reality. Flows, exchanges, processes and interactions have replaced the closed and fixed images. We now conceive matter as energy and information. Einstein's Theories of Relativity have made a real shift in our scientific knowledge, even reaching the realm of Fine Arts. As a consequence, the shape has become a dynamic relationship with the objects and the persons. The ebb and flow of complex connections let happen a new space, made of an in-between moving and endlessly re-built spacing. This decline of the object[1] in aid of its abilities to behave, perceive and communicate goes with something that Lucy Lippard calls "The dematerialization of the art object".[2] There is no way to organize signs, forms and colours on a surface but to construct information architectures among data spaces. There is no way to consider space as a static 3D flagging, but as an assembly of points, which each one is regarded as an "event". Following Kandinsky's visionary thought about a "digital formula", we are now bearing witness to a paradigmatic shift in the economy of representations: from "Point and line on a plan"[3] to "agents in interaction inside a complex system".

Historical examples of a new vision for scenic spaces

To build the world rather than to represent it is an idea that contains a sort of technological thought. But this did not wait for the electronic or digital technologies to exist. In the early twentieth century, László Moholy-Nagy, in the *Manifesto of dynamic constructive forces* (1922), published with Zoltan Kémény in Der Sturm, as well as constructivists, futurists, Wassily Kandinsky, Oskar Schlemmer and most of the artists teaching at the Bauhaus School came up with the idea to energize space with dynamic-constructive systems. They wanted to apply the dynamic principle of life to their works of art. Rather than to realize static constructions based on relationships between matter and shape, they aimed to conceive structures like machines, but machines as dynamic systems within which the matter function is to carry energy.

Later on, artists like John Cage and Merce Cunningham made chaotic systems, applying simple rules to create complex dynamics, leading to a new vision of scenic spaces inspired by the Theory of General Relativity where every point only refers to itself or to points which are very close. In Cunningham's pieces, there is no centre, nor central motif but flow of energy that is the performance flow. The space is already treated like a network of energy, entity and circular information. Sounds, words, movements, colours and lights interact with each other on the scene in a way that allows new autonomous entities to appear, leading to uncharted new territories where unpredictability, autonomy, and unprecedented behaviors emerge.

The research project *Active Matrix*

The project is based on Kandinsky's theoretical and practical work — in particular, on his idea of making theatre "different" in conceiving what he calls "scenic paintings" where the scene becomes a sort of three-dimensional metamorphosis principle based on painting, where sounds, gestures, movements, lights, colours and time mix together in relationship to the "total-artwork" idea that Richard Wagner has theorised with the term he coined :"Gesamtkunstwerk".

According to Kandinsky's thought (*Regards sur le passé*, *Du spirituel dans l'art*, *Point et ligne sur plan*), the creator's mind has to conceive "living artworks". Our digital age provides the artists with new tools to make this happen.

It is in this sense that Yves Demazeau (head of the Multi-Agents System scientific laboratory LEIBNIZ – IMAG at the University Joseph Fourier in Grenoble) and I, came up with the idea to work together to realize the first prototype of this project.

It consists of setting Kandinsky's world into virtual data space, by modelizing a computing simulation that allows the spectator an active and play immersion into the poetic, cosmic and symbolic world of the painting by Kandinsky *Yellow-Red-Blue*, painted between March and May 1925. Every element of the painting is listed, the rules of composition and spatial organization are analysed, global and local tensions are located to computerize the artistic model and its interpretation. The painting, then, becomes a complex dynamic system where the elements interact with each other and with their environment.

Consequently, when playing with the modelized shapes and colours given by Kandinsky, the audience disturbs the whole connected elements which react with gameplay, leading to emergent behaviours. The spectator's interfaced human body interacting with the scenography by embodying the virtual actors and by moving a virtual camera that carries his(her) eyes and points of view into the scene is allowed to self-organize his(her) perception, trying to find a balance between his or her mental state of mind and the equilibrium state of the spatial composition given by Kandinsky.

In doing so, the spectator discovers the construct and behaviour rules of the scenic elements inside the virtual world. By the way, it will provide him/her with means to see the painting with the eyes and indirectly with the hand (holding the mouse), for, finally have a new reading of it. This immersive pedagogical play trip is active and cognitive into the system/image conceived as a complex system.

In conclusion, I could say that this project aims at an aesthetic dimension provided by the emergence of a dynamic system which auto-organize itself and must find a constant balance between the interactions (action-reaction) of the virtual actors's rules of behaviour, the physical and mental movement of the human actors (audience) and their own environment, so that the serious game will be the product of virtual and human elements that interact between them and with their environment coinciding with Grégory Bateson's thinking[4] that the mind is an assembly of parties or components interacting between them and their environment. As an experience to live, the "gamer" is invited to explore such complex concepts in a constructive and dynamic way.

"Active Matrix"
User view
The virtual camera begins its inner travelling

"Active Matrix"
Subjective view
The spectator is inside the element called Observateur 3

1 Popper, Frank. 1975. *Art, Action et Participation 1, Le déclin de l'objet*, Editions du Chêne.

2 Lippard, Lucy. 1973. *Six years: the dematerialization of the art object from 1966 to 1972*. Berkeley, Los Angeles: University of California Press.

3 Kandinsky, Wassily. 1991. *Point et ligne sur plan*, Gallimard.

4 Bateson, Gregory. 1979. *Mind and nature: a necessary unity*. New York, Dutton.

Communities of Inquiry:
The Development of Co-Lab, Aotearoa, New Zealand

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Introduction

Co-Lab is a collaborative network of southern pacific creative communities, which fosters social innovation by connecting practitioners, technologists, researchers and the public. Founded on a unique partnership between AUT University and MIC Toi Rerehiko, arts and media trust in Auckland, Co-Lab is engaged with communication, convergence, creativity, collaboration and communities enabled through new technologies.

This initiativedraws from AUT University's recently formed Faculty of Design and Creative Technologies which brings together Schools of Art & Design, Mathematics & Computer Science, Engineering and Communication Studies. It is also supported by the position of MIC Toi Rerehiko as New Zealand's leading contemporary creative media and interdisciplinary arts centre.

This relationship underpins the unique position Co-Lab occupies and highlights the potential that can be explored both locally and internationally. The small scale, modest economy and relative isolation of Aotearoa New Zealand create both limitations and opportunities. The cultural diversity and specificity of place brings richness and complexity. The slow development of information and communication systems infrastructure since the 1980s has raised challenges for artists, technology developers, communities, arts organisations and universities. While a number of specialist groupings have been formed (for example, groups representing digital artists, games designers or telecommunications users), the development of transdisciplinary groupings that might draw from the specific strengths and different frameworks brought by cultural, educational, entrepreneurial and community sectors has been limited.

Development

Partnerships between universities, industries and the creative sector are a priority for the NZ government's Tertiary Education Commission (TEC). Co-Lab has TEC financial support for three years to develop innovative practice and new creative technology products and projects. We expect Co-lab to reach arts organisations, diverse community groups, creative practitioners, media designers, content developers, tertiary education partners, industry bodies, technology developers & suppliers and international organisations.

Initial areas Co-lab is exploring include areas of performance and interactive technologies, social and distributed networks and visualisation technologies. Our consultations have shown the need, expressed across the different sectors, to consolidate access to expertise, develop cutting edge facilities that support technological convergence and more diverse and effective opportunities for dissemination, particularly in the context of Auckland as New Zealand's largest city. We recognised that the rapid convergences that are occurring across what were previously separate disciplinary, technological and socio-cultural domains have led to problems and needs not currently addressed within what were once very separate sectors. Co-Lab, as a partnership between AUT University and MIC Toi Rerehiko, with other partners, was proposed as an innovative model that would be an effective way of addressing, gaining insight and building cultural and economic opportunities in New Zealand through these convergences.

Co-Lab is a network of partners, facilities, resources, skills and opportunities. It will use a range of premises, services and expertise from across the two organisations. These include MIC Toi Rerehiko's performance venue Galatos; the MIC Gallery; touring and exhibiting networks; a community based digital story telling lab; public projects, and the expertise of staff, independent practitioners and members of MIC Toi Rerehiko. Resources at AUT will include teaching spaces; specialist programmes, facilities, a Co-Lab space and dedicated facility; and the expertise of staff and research students. This underpins the development of a programme of workshops, research and development projects, seminars, residencies, online events, technology

developments, exhibitions, performances, innovation and access to specialist facilities and expertise.

Partnerships are critical to this development and involve arts organizations, creative practitioners, technology developers, educational institutions, commercial enterprises, industry bodies and local communities. Cultural dialogue and social innovation are critical frameworks which underpin the development and direction of Co-Lab.

Projects

We have already established a number of interdisciplinary research and development groups. These include areas of Interactive and Performance Technologies; Mobile and Locative Media; Digital Storytelling; WearableElectronics; Visualisation; Public Use of Technology; and Real time 3D Graphics.

The Mobile and Locative Media group are focussing on engagement and participation through the use of mobile phones, mobile identity (e.g. RFID tags), location-based systems and remote sensors. Leading programmers at AUT University have been working with Co-Lab artists to develop software for mobile phone interactive screen works. This has already been tested at public events and is to be launched at MIC's Galatos venue to provide the beginning of a suite of interactive technologies for this inner city performance space. Postgraduate students also are working on setting up sensors using Sun to develop an interactive environment for VJs at Galatos, and a test space at AUT.

Wearable Electronics: This area is being developed in partnership with AUT's Textile and Design Laboratory (www.tdl.aut.ac.nz). Projects are underway in the development of smart textiles (using smart yarns and knit technologies) and the integration of electronics into clothing solutions for health monitoring and for creative applications. Experimental work has started to explore the potential of Arduino lilypad technologies, smart costuming for theatre and performance, including gaming interaction and in the use of smart inks and textile print processes.

Visualisation: Research in this field includes exploring the potential of new data capturing and processing technologies; the organisation and communication of complex dynamic data relationships; and processes of knowledge discovery enabled through knowledge engineering and the use of intelligent agents. We are researching modes of conceptualising, organising, outputting, and experiencing data and data relationships. Informal methods of building information structures (using semantic web technologies and open source systems) to enable greater participation by non experts are also important areas of investigation. Key partnerships in this area are with the Knowledge Engineering and Discovery Research Institute (KEDRI), AUT and Nextspace, Auckland.

Realtime 3D: This group is engaged with the development of interactive Web3D, augmented reality, 3D rendering and real-time algorithms for game engines, pushing the visual boundaries and interactive experience

Constructing Purgatory, 2006. Artist, James Charlton.

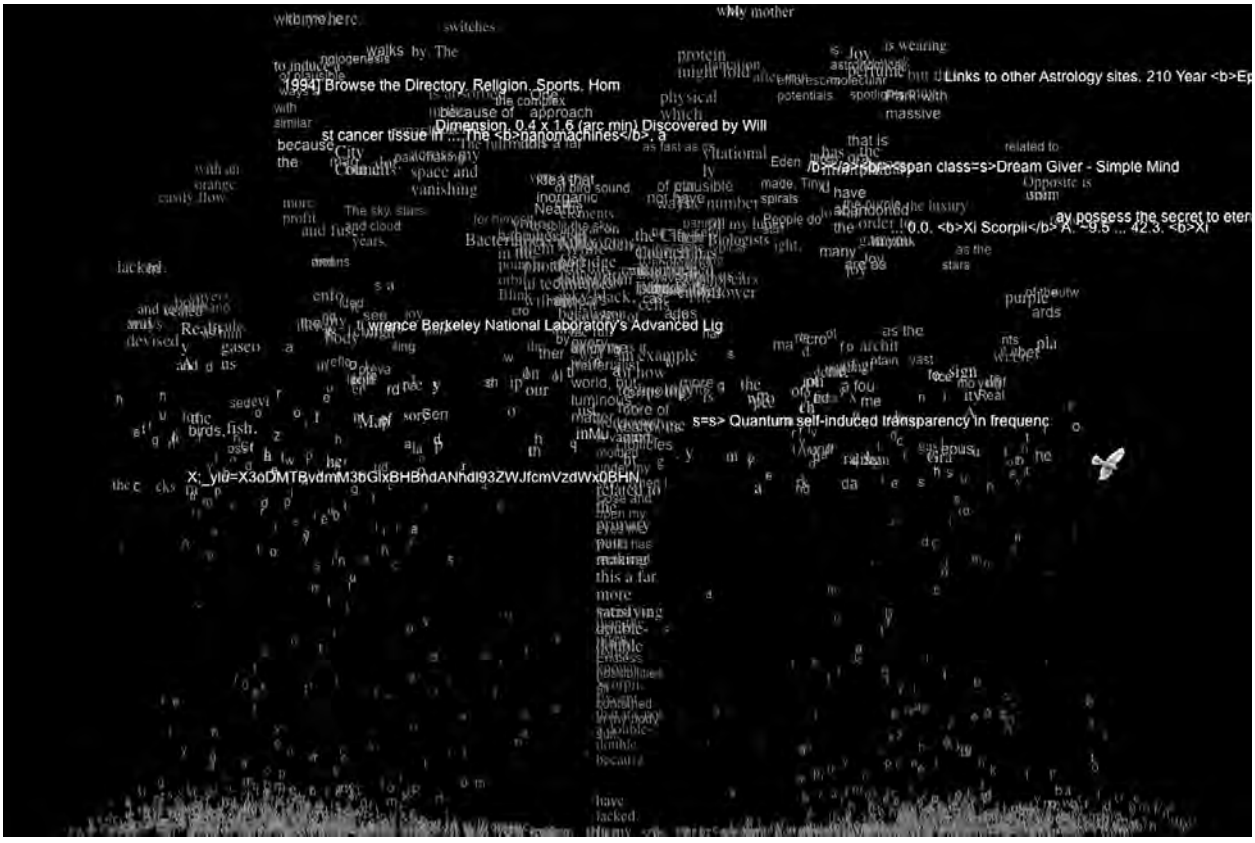
of complex virtual worlds for both real-time and offline domains. A key partner in this area is Nextspace (http://www.nextspace.co.nz/).

Digital Storytelling: MIC Toi Rerehiko launched a Mobile Digital Storytelling Lab this year. MIC and its partners are now staging workshops to empower people to tell a personal story using multimedia tools. This community-based education programme facilitates access, engagement and experience of digital technology

and creates new media content reflecting diverse cultural narratives. Through working with cultural communities including migrant, refugee, Maori, Pacific Island and disabled people, a developing cultural dialogue is facilitated through technology. Cultural specificity is supported through working with local traditions of oral storytelling and being prepared for political and social activism projects to be part of the mix. Through MIC's interface with the public as a new media arts organisation, content developed with the community mobile storytelling lab can be screened or broadcast to invited audiences, archived and made available for public use at MIC's public venue, online, or communicated via mobile phones or other technology.

Conclusion

The model of partnership and collaboration being developed at Co-Lab is supporting the development of a community of inquiry and a physical meeting-ground for creative and community expression, new media industries and educators that will enable the innovative and critical use of technology. As Aotearoa New Zealand's first trans-disciplinary creative technology centre Co-Lab will draw on local and international engagement to enable the development and public dissemination of hybrid ideas, research, cultural and creative practices through innovative formats, modes and networks.



World Tree Image, 2005. Artist Raewyn Turner in collaboration with Colin Beardon.

Experiences on the Boundaries: Screens In Between

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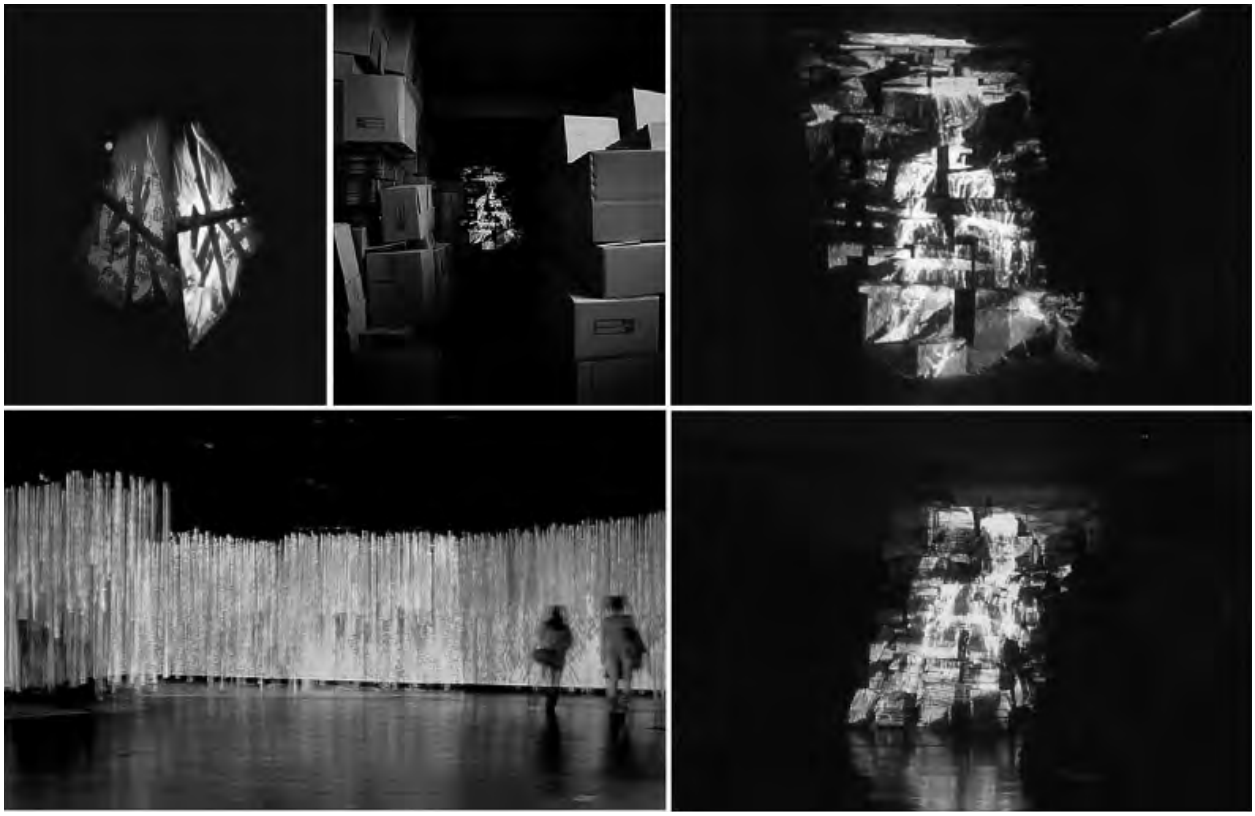
Screen as a boundary object

The ontological condition of the screen is "in-between" several boundaries: the boundary between space and time, virtual and real, immersion and rejection in the sense of similarity and difference. By re-categorizing, connecting and blurring these existential boundaries around the screen, the approaches described here form two kinds of screen experiences: three-dimensional screens in video installations, and 'movable' screens in real-time video and sound installations. In both, the viewer becomes a critical element in creating the 'in-between' screen, because viewers are not only a subject in screen experiences, but also can be a physical conduit combining the separate elements around the screen. In three-dimensional screens, as viewers move around in the physical space that is surrounded by the video imagery, viewers are enveloped in the video image and their existence itself bridges these two spaces. In movable screens, the viewer's response to the work system and the system's response to the viewer, structure the screen experience and function to connect and blur the boundaries. From three-dimensional screens to movable screens, as the viewer's reaction to the work has changed, the function and condition of their response has also changed from meditative and serene in static screens to participatory in interactive screens.

Screens in-between

Three-dimensional screens

Three-dimensional video screens combine video images with a 3D sculpture or an architectural size environmental structure. The physical structure functions not only as a surface for video projection, but as a three-dimensional shape and space inviting audiences to enter in. "Fire-recognition of fire" simulates fire simply by moving from a two-dimensional screen to a four-sided pyramid screen. Looping video images of a fire burning furiously down to ashes are projected on this pyramid from three different directions. In front of this work, some viewers held out their hands as if they felt heat from this virtual campfire. These audience reactions led me to question the relationship of the virtual and physical worlds, and the way in which viewers experience and identify with a work. Architectural screens expand the concept of sculptural screens from the object alone, to an environment that invites viewers to walk around inside the space of the screen. In "WaterFall I" and "WaterFall II," hundreds of paper boxes and seven tons of newspapers are stacked to compose a valley. At the center, boxes are piled to form a stair-shaped screen and waterfall videos are projected onto it with sounds of falling water. When they stand in front of the waterfall, viewers feel like the water is flowing towards them due to the illusion created by the 3D screen. In "the Willow Tree," the tree leaves are substituted with thousands of fabric ribbons suspended from the ceiling. The sunlight and greenery of wind-blown leaves are captured in video and projected onto the ribbons, and the breeze I felt on a hill as a child is replaced with light wind from fans hidden under the ceiling. The fans provide a wind-blown feeling that complements the visual scene of dancing ribbons. With the ambient sounds of locusts singing, the virtually reproduced willow tree in the gallery entices viewers to come walk around underneath and inside the physical/virtual space of the willow tree and appreciate it while recalling their own memories and experiences of nature.



"Fire – recognition of fire", 1998 (top/left), "WaterFall1", 1999 (top/middle & right),
"the Willow tree", 2000 (bottom/left), "WaterFall II", 2000 (bottom/right)

In these works, the dual space and time of virtual and real co-exist simultaneously, and a viewer's existence inside the virtual imagery can be a metaphor for this connection. Later, I wondered what would happen if the virtual imagery can "re-act" to the viewer's reaction. If artworks allow "interactivity", how will the relationship of virtual and real be mixed? If the viewer's physical action can be included in the virtual imagery and trigger some events in the virtual space, will it promote the concept of 'in-between' screen even further?

Movable Screens

The idea of "movable screens" emerged while creating a single-channel video titled "Corresponding". In this work, several layers of corresponding relationships are created, and as a result, their spaces are intertwined through distorted images that occur through the physical movement of the screen. In interactive works, the "movable screen" provides a method for integrating interactivity between the work and its viewers, while emphasizing the connection of virtual and real through

"A BeadBall Table", 2003 (left), "Cross-Being–Todd: a tilting table", 2004 (middle), "Cross-Being–Dancers (Spinning Screen)", 2004-2008 (right)

the screen. Spatially the movable screen stands in the physical space where viewers are located. When viewers move the screen, virtual images follow, reacting to the physical movement of the screen. This encourages viewers to feel as if they control and interact with the virtual imagery.

In the interactive video and sound installation "A BeadBall Table," a tilt-able table with a flat video projection screen defines the physical screen. In this work, real world gravity is applied to the virtual world. Following the viewer's physical manipulation of the horizontal side of the tabletop, virtual video balls projected on the screen roll toward the lowest corner based on the degree and direction of tilt, also generating corresponding sounds. Adjusting the projection to parallel the movement of the tabletop was a technical challenge, so the imagery projected from a fixed point onto a tilting tabletop distorts the image seen on the tabletop screen. However, some viewers felt this distortion revealed the poetics of virtual and real worlds. In another tilting screen work, "Cross-Being: Todd," a human character in the video, Todd, moves around on the screen. Todd is designed to wait until the first audience member comes. If an audience member touches and tilts the tabletop in any direction, he slides toward the leaning corner of the screen. Since Todd's movements are very diverse, the real-time video requires more complicated manipulation. To support this, several stacks of video sequences are stored in sixteen grid locations around the screen. Each time Todd moves to that location, the computer randomly chooses to display one of those sequences. "Cross-being" metaphorically represents the living subject in the virtual world. Thus, Todd's expression is elaborately embedded in order to make him human and lively. If nobody touches the table for a while, he gets bored waiting for users. If the user shakes the table for a long while, Todd becomes exhausted and angry. Mechanically, a spring is used for the tabletop joint to convey its resiliency and elasticity. Therefore, the tabletop automatically returns to the center after users stop tilting it. "Cross-being: Dancers (Spinning Screen)" was also created with a similar idea, but in this case the screen is 'spin-able' by the viewer's touch. Based on the spinning direction and speed of the screen, the displayed video dancer spins along: if the monitor turns, she turns as well and if the monitor stops, she also stops her motion. As such, the physical action of the screen can be transferred to the virtual imagery in real time. Also, slow turns allow the viewer to look at the detailed motion of the spinning dancer. Inspired by toy music boxes in which a ballet dancer on a plate turns as the spring unwinds, this work was created as an interactive optical toy in which a miniature character living inside the virtual world reacts to the users outside.

Digital Dwelling: Building in Online Worlds

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"Second Life" basics: Sex, violence, dwelling

The attraction of game worlds such as "World of Warcraft" is not that puzzling, but why spend time in "Second Life"? Since "Second Life" has been consistently designed as an experiment into user freedom, this world is of particular interest to the study of online worlds (or "virtual worlds"). "Second Life" can give us a sense of what happens when a world grows from virtually nothing, and with intended minimal interference from its publicists. Everything inside "Second Life" is built by users, but what do users build for? What experiences do their designs support? "Second Life", in other words, offers a suggestive glimpse of the basic, experiential categories emerging from almost absolute freedom in an online world.

Sex, is the most obvious answer, when considering fundamental, experiential categories of "Second Life". The statistics are tricky when it comes to interactive pornography in "Second Life", but sexual activity is certainly built for and takes place on a large scale.

Violence is another answer. Digital, interactive media has a certain affinity with violent action. To have an experience of an interactive nature, the user must have frequent opportunities to act, and to perceive an immediate change in the state of the digital world resulting from his or her actions. Allowing the user to watch death and destruction as the result of pressing a button is an efficient way of achieving interaction (Ryan 2002: p. 603). Violence has been designed for in certain parts of "Second Life". The truly trigger-happy user will prefer other online worlds more specifically aimed at violent action. Still, it is thought-provoking to see violent action emerge as a major, experiential category of "Second Life".

Sex and violence. One could point to other, more refined experiences: learning, listening to music, or the secondary experience of shopping (which is often aimed at facilitating more fundamental experiences, such as sex or violence). But even without the benefit of exact statistics, it is safe to assume that users spend far more time engaged in interactive pornography than attending concerts; far more time fighting than learning French. The basic affinities of online worlds seem to resemble those of other audio-visual media. As Jean-Luc Godard famously suggested, all you really need to make a film is a girl and a gun (again: sex and violence). The online world is, however, not only an audio-visual medium, but an interactive, audio-visual medium. Another major, experiential category, one as fundamental as sex and violence, emerges as a result of the "Second Life" experiment into user freedom: *dwelling*.

Dwelling and immersion

The idea of dwelling is an architectural and philosophical one. It denotes a specifically human relationship to a well-known place. Media scholars, however, talk of the sense of presence generated by interactive media by invoking the concept of *immersion*. Many factors leading to immersion have been suggested, but as Marie-Laure Ryan notes, "[t]he interactive nature of digital worlds is the true foundation of their immersivity" (595). In other words, immersion is not theoretically contingent on three-dimensionality. This claim seems validated by early, ethnographic work on text-based worlds. Annette N. Markham describes how users of 1990s, text-based worlds conceptualised their online world in three, basic ways: as tool, as place, and as way of being (86). Apparently, users had some sense of place right from the medium's beginnings, but all other things being equal, sense of place has been strengthened with the introduction of central-perspective 3D-graphics and a higher degree of motor-isomorphism (i.e., resemblance between user input and avatar movement). The experience of online place begins to resemble the experience of offline place a little more, making architectural thought a little more relevant.

To dwell is not only to be immersed in place, but also to build, as Martin Heidegger argues. Heidegger insists that true building is not only the construction of housing but also a kind of cultivation; cultivation of something that grows on its own, but needs you to "to cherish and protect [it], to preserve and care for [it]" (1971). Heidegger's points seems to be confirmed by my own, ethnographic observations from within "Second Life".

Many buildings in "Second Life" are collective projects. I will briefly mention one ambitious, large-scale project that I have been following since early June 2007. The five builders describe themselves as a "family". In their building, they carefully mix together several different historical styles to create the sense of a building developed slowly over a large span of time. The project reached a first peak in October 2007 with a very well attended housewarming party, but the family kept on modifying the building; major additions and changes took place, with a surge in activity from February 2008. In April 2008, however, the family had to leave their land and start all over in a new place (this was due to the shutdown of the larger area their land belonged to). This did not dispirit the family. On the contrary, the building project was recast on an even grander scale with much hard work ahead.

The financial situation changes, and so does the social scaffolding of the project (the specific social structures steering the building project). Friendships cool off; neighbours come and go. Through all this inside and outside change, the overall goals of the users' "second lives" remain stable; or, their goals remain *in place*, i.e., intimately linked to specific places. As the leader of the group expresses these goals, they are "[to search] for a home" and "keeping my family together" (June 2007). The builders pour vast resources of time, money (costs are shared) and creativity (the design workload is shared) into the building. The building (the *thing*) is intended as a home, and this goal was to some degree reached early on. But still the building (the *activity*) goes on with no final end in sight, underlining how building and dwelling intertwine. Constantly building (for) a home strengthens the users' sense of online dwelling.

Conclusion

It is time, perhaps, to become fascinated with the old, rather than with the new. Since the 1980s, a fascination with digital technology, especially with the fluidity of the digital, have fuelled speculations as to how human culture will be radically transformed (cf. notions of "Cyberspace" and "Virtual Reality"); even humanity itself would be subject to radical transformation (cf. the notion of "cyborgs"), or so it was speculated. Today, it is fascinating to see how "old" human experiences (sex, violence, dwelling) make themselves felt on new, digital and online conditions. When it comes to online worlds, understanding the basic, human urge to dwell is a highly relevant challenge for academia. Media scholars can meet this challenge by leaving cyborg speculations behind, and move closer to ethnography and architecture.

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Media Art Using Korean Traditional Cultural Archetype

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Introduction

The Korean Culture and Content Agency's 'Cultural Archetype Digital Content Project' was initiated in 2002. This project is to provide digital content that is based on Korea's unique cultural archetypal data. In other words, its goal is to produce digital content using various cultural archetypes such as the Korean history, tradition, folk, scenery, etc., which are usable for culture content industry. In the business field, however, the negative evaluation is compatible with affirmative evaluation. Thus, the relationship between the value of digital content and the cultural archetype should be discussed, because cultural archetype is changed in the form of culture content, and digital content is prepared for the public.

As an example, a special exhibition was held at The National Folk Museum in September, 2007. In this exhibition, some media art works were displayed with historical relics. All the media art works of this exhibition utilized existing relics as a cultural archetype, which kept the original meaning whilst re-interpreting them. In this experimental practice, new media including digital technology make the cultural archetype look and sound different and new.

In this paper, those experiments are classified into three categories which are the representation of Korean traditional painting, traditional folk dance and folk photograph. Then, in the view of culture content, it is discussed how the cultural archetype can become media art, and how it provides synergy effects when cultural archetype is utilized in media art.

Cultural archetype

Cultural archetype is cultural product as cultural heritage including mental/physical properties and patterns of a culture. Cultural heritage is divided into the tangibles and intangibles, for example, historic sites, historic buildings, traditional paintings, and antiquities as tangibles, and traditional music, dance and folklores as intangibles. In Korea, Cultural Heritage Administration specifies important tangible/intangible cultural heritages that are valuable in the historical/artistic/scholarly, and preserves them.

There is a reason that cultural archetype is used in this paper instead of the term, cultural heritage or cultural property. The meaning of cultural archetype is similar to cultural heritage or property, but cultural archetype has a specific property as having an original source that can be transformed into digital content or culture content. Thus, the term, cultural archetype is used as 'original source' or 'source data' for producing culture content in cultural industries.

Culture content and culture technology

Culture content is a cultural product that the cultural attribute in mental value and its meaning is converged with digital media technologies. The Korea Culture and Content Agency (KOCCA) defines the culture content as the content of cartoon, animation, character, music, broadcasting, game, etc. Also as source data for producing the culture content, KOCCA suggests a project of excavating and developing cultural archetype. The final goal of the project is to digitalize them, and to provide it to the user free-of-charge or charged via websites.

Meanwhile, the culture technology (CT) is the core term for producing culture content. The concept of CT, however, already exists in experiments of media art works. Culture technology is not so different from digital technologies that have been used for media art.

Table 1: Categories of media art using cultural archetype

Categories	Art Works	Cultural Archetype	Culture Technology
Traditional painting	*Digital Mudong*	Kim hong-do's genre painting *Mudong*	•digital animation •interface design
Traditional folk dance	*Digital Seungmu*	Lee mae-bang's *Seungmu*	•motion capture •4D projection
Folk photography	*A Journey of Korean folk sound*	24 folk photographs	•interlocking touch sensor and PC •digital sound editing

Analysis of media art works

- **Traditional genre painting, *Digital Mudong***

Mudong is painted by one of the famous painters in old Korea in the Lee Dynasty of Chosun, Kim Hong-Do. In the painting, a little boy is dancing with other musicians. This painting is evaluated as a dynamic expression as if musical sound is heard. *Digital Mudong* shows animated characters moving and playing in the painting represented in PDP screen. A touch-screen is placed in front of PDP screen, and a spectator can touch each character, and the touched character is dancing and playing in PDP screen.

Figure 1: Junghwan Sung, Digital Seungmu, 2007

- **Traditional folk dance, Digital *Seungmu***

Seungmu is one of the most representative folk dances of Korea, performed by a dancer dressed in Buddhist monk's attire. *Digital Seungmu* uses motion capture data from the famous traditional dancer, Lee Mae-Bang's *Seungmu* dance. Four animations which come from four different directions are projected in the reverse-pyramid glass-structure to produce a 3D animation. The dance animation is floating in the glass-structure, and the spectator feels the novelty and mystery of the dance.

- **Folk photographs, *A Journey of Korean folk sound***

This art work is an installation of 24 photographs are inserted in backlight photo-frames each, using LED modules. The content of each photograph is a folk portrait and landscape from the last Lee Dynasty of Chosun to Japanese colonial period 1910-1945. Touch-sensor is attached to the inner side of each frame and interlocked with PC. When a spectator touches a frame, s/he can listen to the sounds related to the content of the photograph.

Conclusion

These media art works using cultural archetype are shifting the aesthetic object from the stand-still oeuvres into dynamic entities. They also re-interpret the mental and physical heritage into our contemporary aesthetic experience. Furthermore, media art works using cultural archetype can be expanded into contemporary culture content. They are our active aesthetic experience, our interpretation, our contemporary cultural perspectives and the culture content here and now.

Variable Fiction, a New Literary Genre Questioning Cooperative Writing and Reality Jam

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VARIABLE FICTION is an original literary genre based on a new type of informational element, which we call a *Topos.*[1] It can be defined as modelized, crossmedia, interactive and massively cooperative fiction. Variable fiction is meant to be broadcast and edited on any and on all media, digital or not.

«THE 3FOLD SPACE» is the first variable fiction. Approximately 2000 people have already contributed to the writing and 500 of the resulting texts have been selected and merged into the fiction which contains over 1500 different pieces.

The French digital platform, www.3espaces.com, was developed over a period of 6 years and tested for 2 years before it was launched in May 2007. This platform is an innovative interactive reading-writing-glossing space which is visited by approximately 5000 readers and writers every month.

The 3FOLD SPACE cooperative writing campaign is due to last until 2014. It will progressively extend to different languages and countries. Each country will create an independent «sphere» after the initial "model", with specific local additions. A common bilingual core (English and French) will incorporate the texts that have been deemed the most important by each sphere.

The most complete artistic experience that variable fiction can offer is best described as «pervasive» as it takes place both in real urban environment and in the media. Such an event was organized in March 2008, when one «episode» of the fiction was presented in the most important Parisian commercial center and first subway hub worldwide, *Le Forum des Halles*, creating a kind of "reality jam" experience and questioning the frontiers of fiction in our digital society. Over one million people came into contact with this pervasive fiction in the course of one week.

Topos and variable fiction

The basic idea behind the *Topos* is that crossmedia content should not be meant for adaptation but for actualization. Adaptation derives a second object from a first one and so on. Actualization requires a determined and identified *virtual object* that *actualizes* itself according to the different media, users, uses, needs and situations.

This virtual object is not just a "matrix": it is a modelized informational space that is defined, organized and constructed for the purpose of coherent extractions and combinations.

Being modelized, a *Topos* enacts rules, constraints and categories that determine which elements may or may not belong to the virtual space. Consequently, any element that conforms to the criteria may be introduced into the *Topos* and a relevant position found. Coherent cooperative creation and re-use (remix) is thus possible, even on a large scale.

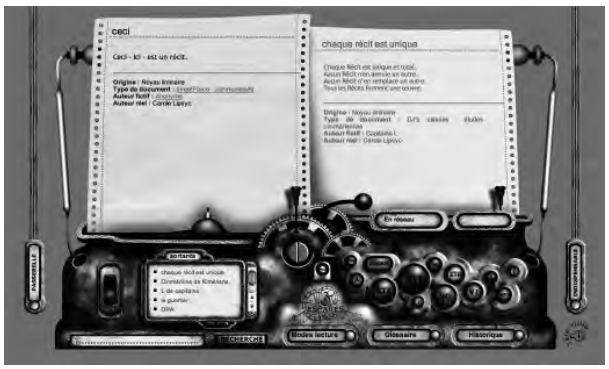
VARIABLE FICTION denotes a literary and narrative *Topos*.

Variable fiction and cooperative writing

The 3FOLD SPACE digital platform provides readers with different tools which allow them to:

- perform "active reading" which includes interactivity, annotation, the selection of favorite texts and the writing of "satellite texts";[2]
- create their own character and animate it via a blog; and
- take part in the cooperative writing of the fiction.

THE 3FOLD SPACE is a literary work. This means that the aesthetic dimension of literature takes precedentce over the cooperative dimension. Cooperative writing must contribute to the quality of the work but cannot be considered a goal per se. This explains why the cooperative contributions need to be evaluated by an editorial committee. By contrast, comments, «satellite texts» and blogging do not require any editorial control. They do not belong to the official narrative: they



The digital platform

contribute to the adoption of the fictional universe by the community of readers.

Cooperative writing must be distinguished from collaborative writing and from collective writing. Cooperative writing refers to a creation process where every contributor is distinct and where each element that s/he brings is acknowledged as his/hers; collaborative writing describes an activity that combines people with different skills (illustrator, engineer, writer, etc.); collective writing applies to a group working together to produce a document without any possible distinction concerning the contributions of each member. Cooperative writing, however, does not imply the traceability of publications as wikis do: it is about the individual characteristic of the contribution.

Each variable fiction can produce its own rules concerning the role of cooperative writing and the necessity of an editorial committee. In the case of THE 3FOLD SPACE, I am the author of the model, of the narrative data, of the preliminary core (the first 1000 texts) and I head the editorial committee. This fiction is first and foremost an authorial fiction, but I have invited my readers in. Legally, the fact that the contributors follow the rules that I have edicted and that I eventually choose which texts belong to the *Topos* designates me as the author of the fiction. Each contributor is the author of his or her own text but not of the fiction. These fluctuations and possibilities between exclusive and cooperative authorships are representative of the digital era creation.

Variable fiction and reality jam

On March 2008, THE 3FOLD SPACE was broadcast on a pervasive mode:

- Over 600 m^2 of vinyl posters were displayed along 3 aisles across the commercial center, interacting with Bluetooth messages sent on the visitors' phones, 2D codes, audio messages, street theater shows, clips screened in the movie theaters and showing on shop screens, etc.;
- Text messages and emails were sent to the readers who had subscribed;
- An exhibition was set up on Second Life; and
- A pervasive game was organized that included many different technologies in the city and online.

The episode ended with an incident happening that had been announced in the story: a spatiotemporal slowdown. The readers who received the text or email messages were given instructions concerning the happening. The last step of the pervasive game also included the same instructions. Thus the happening was part of the story and the participants became actors of the fiction. They made it exist in the real world. Two hundred people met in the main hall of the commercial center on the last day of the event and froze for four minutes. When they moved again, they handed a book, a magazine or a text to a passer-by and then scattered.

In this case, the reality jam was not created through 3D visual simulations or through images but through literature invading the urban space, through interactivity and acting. The use of everyday technology (cellular phones, emails) enhanced the immersive feeling. People actually had the impression they were living in the fantastic universe of THE 3FOLD SPACE for a while.

The final happening and the 3FOLD SPACE map on the ground or the hall

To conclude I would like to emphasize the fact that variable fiction, which is a literary genre of our digital era and communicating society, requires important human and financial means. The pervasive episode required the involvement of 40 different partners and the team was made up of around 50 people. Furthermore, variable fiction also requires time: time for creation, time for expansion, time for the conquest of an audience, time for the teaching of its semantics. To develop such new forms of arts, artists have to accept to become researchers, entrepreneurs, negotiators and educators.

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1 This term is inherited from the antique art of rhetoric and has lived already more than one life throughout history, particularly in philology and literary theories. Here, though, it is used with yet another new meaning.

2 Texts that are inspired by the fiction but that do not belong to it.

Over the Border

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Two Koreas

The lower part of the Korean peninsula is virtually an island. The upper part of it is also an island since it is the world's most isolated country in this age of information.

The place named Panmunjom referring to the Joint Security Area (JSA) locates the boundary between these two islands. The JSA used to be the only place without a clearly marked millitary demarcation line in the DMZ of Korean peninsula — the most heavily armed DE-Militarized Zone. It is known as the national border between two Koreas. Tourists escorted by military personnel are permitted to take photos of the line which is nothing but cement slabs on the ground. At the Military Armistice Commission, even border crossing is allowed in a meeting room. This honourable behaviour is certainly one of the most popular attractions in DMZ but it is not a technically national border. The war is not over yet.

Either from south or north, a non-Korean can visit the JSA for sightseeing whereas a South Korean needs to apply and wait for 60 days to get access to the JSA, just 30 miles away from Seoul. Still, this is a better situation compared to a North Korean, who may have to wait for almost 60 years.

On June 16th 1998, Ju-Yung Chung, the founder of Hyundai Group stepped across the border in the JSA to visit North Korea with 500 cattle as his gift to his homeland. It was the first historic event that a civilian crossed the military demarcation line without military personnel since 1953 and CNN exclusively broadcasted this to the world.

The official results were the beginning of tours to the Mountain Keumgang and peace bloomed in the Korean Peninsula. Now, a South Korean does not have to struggle to access the national border as there are other easier ways to cross the border without passing the JSA. One may get a job in Kaesong Industrial District and commute to North Korea, or, one can join tours to Mountain Keumgang, although the tours are strictly limited and regulated by mountains of rules.

Two borders

Everything is so symbolic. On one hand, the tension in the JSA symbolizes the tragedy of divided country, evoking fear for the possible resumption of war. Yet, people tend to overlook the symbolic status of the JSA as the national border, a well-made stage of political dramas. On the other hand, there are increasing comings and goings of people and goods in a hopeful mood created by political and economical interests. The mass media celebrates this myth of peace and boosts political romanticism, hiding all dickers behind. This is progress in propaganda serving different political ideologies rather than actual circumstances, as seen from the case of New York Philharmonic's recent visit to Pyongyang.

These systems transmit absurd notions of the national border between two Koreas, resulting in the coexistence of a visible border and an invisible border. Though wires around the DMZ may gradually wear out, the physical border is a visible symbol of the Cold War that will not collapse without a peace treaty. Meanwhile, there is the other border in the minds of the people, consisting of prejudices. This will grow more and more ambiguous and harder to break up, as far as people remain ill-informed and indifferent to reality. Eyes should be kept on this border. The world witnessed the fall of the Berlin War, for example. It began from the changes in people caused by gradual inflow of western culture. North Korea's regime knows that isolating their county is the best way to preserve their system. This is the reason why North Korea strictly prohibits its visitors from bringing personal media like cell phones or laptop computers in addition to foreign materials written about North Korea and publications within South Korea.

Art on borders

As seen above, one is hardly able to access the North and there is scarce chance to face people in the North. Besides, any individual behaviour challenging the actual border means risking one's own life. Even if one tries to get North Korea involved, the project is apt to be frustrated. For example, a media art workshop for children in North Korea is desirable but is unlikely to be realized even if it serves purely educational and artistic purpose. Most of all, inflow of new media and access to information other than government propaganda are completely blocked in North Korea. Unfortunately, like a dormant volcano, any artistic gesture seems to be practically impossible in Korean peninsula.

Considering the symbolic nature of the borders, however, one can realize what should be the main concern of art, particularly in case of two Koreas. It is not whether the physical border line is crossed over by someone who has enough money or power to do so. Rather, the way people perceive the circumstances is crucial. It might be a consolation that all these limits and obstacles highlight the fundamental role of art — artistic expressions have always affected on human experience and thoughts. Therefore, art should ponder and engage in how to incapacitate the invisible borders.

In this context, Masaki Fujihata's Field-Works Collaborations, especially the [Field-Work@Alsace] in 2002 and [Landing Home in Geneva] in 2005 is a good example. He walked around the national border between France and Germany in Alsace, interviewing local people. In the final image, the artist's GPS data is juxtaposed with floating memories of encounters at each spot. By raising questions of political or geographical borders we know, he draws more meaningful lines from everyday life and experience. In Geneva, he explored the invisible borders of languages and culture by interviewing interpreters and human borders who are supposed to be invisible. Typically, he shot his and his interviewees' experience with panoramic lens which breaks down the distinction between a cameraman and the pictured.

Although it is not feasible for the artist armed with a video camera equipped with GPS to take a walk in the inter-Korean land charged with numerous land mines, his works give valuable inspiration to this theme of border transmission. As artworks manipulating technology, they challenge the conventional understanding of the border and undermine the invisible border in our mind which needs to be dismantled.

In the past decades, interactivity has been one of the key words in the field of art. One thing is hardly deniable — the oldest and most fundamental interaction created by artworks is their influence on the visitors' perception of their world. This paper with a naïve title founds its argument on this simple fact.

Paradox and Play: Beyond Computer Games

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Playing means fun, resolved in laughter, and it has little to do with the products of entertainment industries. This paper wants to reveal the subversive power of laughter, fun and play beyond gaming.

The phenomenon of laughing is usually linked to the comical, which is the human experience of the paradox. In the world of the comical, the rules differ from those in reality. Like games, the rules of reality are suspended. Humour represents a possibility of subjective and individual experiences to perceive something as comical. The impression of the comical or the funny can be resolved by laughing.

The scientific examination of laughter has always been interdisciplinary since philosophy, physiology, anthropology, psychology, and sociology, as well as religious and art studies have investigated laughter and humor from different points of views.

Plato (427-348 BC) dealt with the dangerous notion of laughing, and, rather than focusing on the aspect of fun coming along with laughter, he recognized its power to subvert, which could work destructively on the state, and even undermine it. He suggested laughter as the privilege of the superior, and as a sign of power, and thus became the first thinker to link laughter and subversion. Laughter was to be avoided and "persons of worth, even if only mortal men, must not be represented as overcome by laughter, and still less must such a representation of the gods be allowed."[1] There were only bad consequences of intense laughter, which for him was above all a mixture of anxiety and pleasure, a Schadenfreude. In order to build up the ideal state Plato even wanted to purge literature from its laughing heroes and gods.

In the same line, Aristotle (384-322 BC) argued that laughter was a form of a sophisticated disrespect and of subversive effrontery, but, as a form of the comical, it would not be wrong or hurting. Laughter was like a mask, which was ugly and deforming, but did not cause pain. However, Aristotle also concluded that laughter was linked with a specific form of surprise and unexpectancy. Following Umberto Eco, there exists an Aristotelian theory of laughter, which was included within his lost second book of Poetic. According to this, laughter was an art, a philosophy, which liberates from constraint. In the 14th century, the recovery of this book in a monastic library in Italy would be avoided by all means — a story, which is told in Eco's *The Name of the Rose*.

In 1776, James Beattie introduced the notion of incongruity when two unfitting parts were put into one context, thus evoking laughter, and Immanuel Kant stated that laughter was caused by something paradoxical.

Perhaps, the cyberneticist Gregory Bateson explained best the subversive character of humor we are interested in: As for a joke, the messages in the first phase of telling the joke carry some informational content on the surface, whereas some other content is implicit in the background. When the point of a joke is reached, suddenly the background material is brought into attention and a paradox is opened. "A circuit of contradictory notions is completed."[2] It is about a figure-ground relation: when we, for instance, think or name a person, a figure, or a table, we have, according to Bateson, also defined the existence of a universe of not-this, a ground. The first step toward the paradox is to say that the person who speaks about a table is thereby defining the class of non-tables. To complete the paradox means to actually treat the non-table, which is to close the circuit of ideas. Following Bateson, the paradoxes are the prototype of humor, and laughter occurs at the moment when such circuits are closed.

Laughter implies a comparison of the code of one individual with the code adopted by the group. Laughter

arises, for instance, when the individual observed does not behave according to the code of the observers. Laughter is one way of bridging the discrepancy or the gap. A machine, for instance, which was thrown into some sort of oscillating condition by some contradiction, would, if it could, laugh whenever the input and the coding did not match properly.

Emerging from contradiction, it is this sort of humor, which demonstrates the flexibility and the freedom of discussion within a social situation or relationship. It is the freedom to admit paradox, the freedom to talk nonsense, to entertain illogical alternatives, and to play, which is reserved to an individual humor not pre-programmed and pre-performed by entertainment industries.

We are into such humorous and playful statements or works that treat non-tables, that demonstrate subjective observation and paradoxical imagination, and in this way individually question the surface of commodities, of design objects, of entertainment structures and cultural narratives.

The works that allude to things and uses and at the same time imagine their counterparts, non-things, and anti-uses can complete these circuits of figure and ground, which produce humor. It is about conventions and the inversion of conventions, which, not only make fun, but which become important if conventions, such as fashions and trends, are usually set up by money-intensive markets and their industries. Therefore, we investigate different forms of medial works and plays that somehow close up the circle of paradox, and thus show alternative practices to the mass market and the common culture. Forms of creative misuse offend technological industries and mass culture by succumbing to homogenous and uniform commodities. In the words of Michel de Certeau, consumption "is devious, it is dispersed, but insinuates itself everywhere, silently, and almost invisibly, …"[4]

Figure 1: Bagel to go[3]

Figure 2: Eiffel Tower manipulated by introducing noise[5]

As we are architects, we close by showing a series of unstable architectures trying to react on a fashionable high-end rendering culture, that usually displays smooth photorealistic and very clean images. In playing with user software, we came up to introduce noise to 3D forms, generating paradoxical forms of well-known buildings.

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1 Plato, 360 B.C.E, *The Republic, Book III*, translated by Benjamin Jowett, http://classics.mit.edu/Plato/republic.4.iii.html

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Technologies of Location:
Affect of Place in Artistic Uses of Mobile and Social Networks

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In her essay *Cinema and Embodied Affect*, **Anne Rutherford** refers to Foucault's notion of anatomy as the "techniques of the corpse". The human body on the dissection table is "robbed of life, severed from its connection to the lived experience of that body." In a morgue, bodies are lifeless. From a satellite perspective, analogous to the ways anatomy configures embodiment, places are lifeless.

Taking embodiment and an effective experience of a place as a starting point, I want to reverse an often-used perspective on geolocation. Places become meaningful through individual and shared acts of signification, not because they register as location data. How do artistic practices using various technologies of location construct living places? Is effect of place, rather than effect of technology relevant to location based media arts practices?

My current research project Technologies of Location paraphrases **Jonathan Crary**'s classic book *Techniques of the observer: on vision and modernity in the nineteenth century*. It can be argued that technologies of location and networked surveillance have extended the project of modernity. Use of technologies like GPS is, according to **Caroline Bassett,** about remote sensing, "which suggests profound transformations in human sense perception, part of a broader series of (technologically influenced) shifts that are having an impact … on everyday life".

"Remote sensing" seems to suggest that it is possible to be in a place and experience it from the outside at the same instant. In fact, using any networked media would imply that one is "remote sensing". Nevertheless the term points towards the challenges artists and designers have designing with location based media. The users are experiencing their immediate surrounding, while through audio or tiny screens, they access a representational layer about the same location. Remoteness, however, is coincidental, as GPS, WiFi or mobile phone network cell locations as such are meaningless. What does matter is what is made visible to whom and what remains hidden.

In **Blast Theory** projects *Uncle Roy All Around You* (2003) and *Can You See Me Now?* (2002), places are part of a game scenario. Usage of street and remote players creates a tension between performing in place, and being able to remotely take part. Even though GPS coordinates are relevant from a functional design perspective and perhaps contribute to a location based imaginary, in these works affects of the social and playability are more central than affect of place.

Rather than talking about a more permanent sense of a place, following Pierre Mayol's concepts of the neighborhood, in these Blast Theory projects a pedestrian temporal experience becomes momentarily sharable. Participation is the key, without which these works are not accessible. In a more recent work titled *Rider Spoke* (2007) Blast Theory experimented with asynchronous participation, where "players" were able to record and share one's impressions of "places to hide". Without a motivating game scenario, Rider Spoke was not successful in socially bonding different participants. Its format, a bicycle ride guided through a small PDA screen and small headphones in busy London traffic was a sensorial overload, a good reminder of how hard it is to design audio-visual interfaces to public spaces.

Miwon Kwon, in her book *One place after another: site-specific art and locational identity*, describes how early site specific art was concerned of the material conditions of urban sites. More recently, site specificity has meant increasingly relations between people, practices, and places. She speaks critically of artworks, which are able to move from one place to another, forming **temporal intimacies**. A more responsible role by an artist is to form longer-term commitments to places through **sustaining relations**.

In Urban and Social Tapestries by Proboscis, location based media becomes a tool and a platform for experimental ethnography. Much in the tradition of community arts, collective narration of places becomes a way of not only writing or making media about them

but for creating a new kind of sociability between the participants as co-authors and co-readers.

Ann Rutherfood moves beyond Crary to Glen Mazis's work, understanding affective aesthetics as a combination of tactility, embodiment and movement. In location based media, affect of place is at the same time constructed through an immediate as well as remediated sense of place. Seen often as an individual exercise, a sense of place in location based media arts can, if only for a transient moment, be socially mediated and constructed.

Somehow, this social constructedness of place turns architectures naked. Perhaps the dead corpse on the urban dissection table is the concrete city itself, which like a hard drive is continuously written onto (representations and memories fade and are erased by new ones). If cinema is able to suggest a kind of nostalgic permanence as an imaginary of a city, location based media arts form more like asynchronous platforms on which to perform both individual and social urban practices.

The emphasis on practices coincides with the growth of social uses of computer mediated networks. Like anatomy is unable to understand embodiment, Human Computer Interaction theory is not able to describe let alone grasp varied networked practices. Recent network theorization based on HCI, for example by **Tiziana Terranova**, instead extends biological and technological systems to the realm of the social in the tradition of cybernetics.

If the system theory positioned users as structuralist actors in a feedback loop in logical and geometric schemas, what follows from a similar approach with regard to geospatially driven media? The user position is that of a dot, and over time, that of a line. In GPS drawing works by The GPS Drawing Project, in Amsterdam maps by Esther Polak and beach walks by Tery Rueb the resulting spatial imaginary is reminiscent of 1960s generative computer drawings inspired by cybernetics. Only this time, the human agent has become an actor within the system schema. This "pin point" position or spatiality is "unlivable". The geolocation dot does form a trace, but it remains an ephemeral signifier often unable to grasp the affect of sociability, mobility, and place that participants in network practices experience. Like the time code that marks video and film, that dot becomes relevant only insofar the play or interaction around it, the media or the narratives attached to it are able to create an affect of place, or an affective situation, oscillating between sustainable relations and temporal intimacies.

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Media Blackout—Networking News inside Pakistan

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"Pakistan is a democratic society trapped inside an undemocratic state" ... "we are living through Pakistan's moment of democratic struggle." Adil Najam[1]

Introduction and abstract

From 9th March 2007 until 18th February 2008 the people of Pakistan witnessed an uprecedented spectacle of events. It started with the dismissal of the Chief Justice of the Supreme Court of Pakistan by the country's leader General Pervez Musharraf. This had happened before in Pakistan's history as early as 2002 although no fuss had been created about it by the media at that time. Unlike then, this act on 9th March 2007 triggered a series of events that spiralled Pakistan from being a US supported, military regime to a country whose citizens shouted their desire for democracy by voting in elections to restrict Musharaff's political party to an insignificant part of the new coalition government.

Privately–owned channels in Pakistan market themselves by promising people empowerment through provision of truth, something that state–owned media is not credited for. Until 2002, there were less than five independent television channels broadcasting in Pakistan. By 2007, independent Pakistani television channels numbering more than twenty, armed with their new found partners in other media, decided to make coverage of the deposition their prerogative. Thus lawyers protests were given prime air time on television, headline space in newspapers and a large number of Pakistani, internet-linked networks were created or had a change of priorities just so that information could be shared globally about the civil movement that was slowly taking root in the country. Ironically, General Pervaiz Musharraf's initial policies on media had matured private, media organizations enough to implement this strategy. However, feeling the heat after the March 9 dismissal, on 3rd November 2007, Pervez Musharraf imposed emergency on the country slapping the media with an ordinance that sought to curb most of its freedom and incarcerating most of the senior judges and lawyers who had been at the forefront of the restoration protests for the deposed Chief Justice. This paper identifies some strategies employed by information networks and shows how they adapted to continue informing audiences during the Media Blackout that was imposed on 3rd November 2007.

A society developing through freedom of media

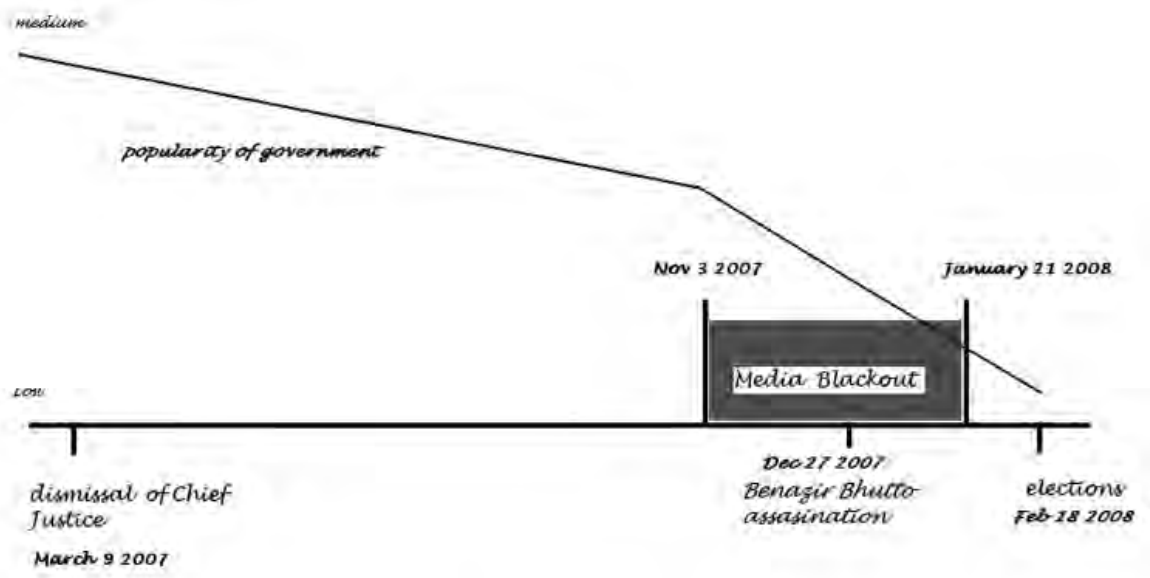
It was after the 2005 earthquake in the north of the country that Pakistanis realized their power through organized networking using peer-to-peer contacts and information sharing on television and via the internet.

When access to full information was denied after 3rd November 2007, a reaction took place in society. By then, the Pakistani audience had seen it all; from hidden camera recordings showing ruthless gangs firing upon civilian rallies to images of headless bodies and severed limbs after targeted bomb blasts on camera. There had been endless television debates on the legitimacy of current governments and the inefficiency of main civic institutions. As the rest of the world portrayed Pakistani Muslims as terrorists, perhaps the most liberal discussions on Islam were taking place locally.

Theatrics connected to live coverage were being exploited fully by producers, politicians, protesters and enjoyed as much by audiences all over Pakistan. This might have been the first time in history that a democratic struggle against the establishment succeeded because arm chair revolutionaries turned into angry voters when their favourite shows were switched off for three months before the elections!

Protesting the Media Blackout

With the independent media struggling to inform despite restrictions, a cumulative agenda emerged in the fight for freedom of media and the judiciary. The people of the



Media Blackout_ Networking News inside Pakistan

country were re-introduced to the politics of protest after almost two decades. Politicians joined in as elections were near and votes needed to be accumulated. The return on 18th October and the subsequent assassination of Benazir Bhutto on 27th December 2008 added fuel to the fire. People were angry at the government.

During the blackout, the banned news channels continued producing programs and transmitting internationally. Local audiences in defiance accessed channel websites to view webcasts and news updates round the clock. Channel owners protested with black logos on their subsidiary channels showing a subscript that stated the main channel had been taken off air. Those Pakistanis who could afford it put up satellite dishes, those who could not just enjoyed the fact that others had done so. The ban applied to radio channels that gave news updates as well. Radio jockeys were not allowed to take calls, frustrating listeners as participatory shows were the most popular ones on television and radio.

Many activist groups amalgamated themselves under one name, like the People's Resistance. Their use of internet–based information sharing and sms was crucial in recruiting and mobilizing local and international members. Since the action was spread all over the country, online blogs like Karachi Metroblogging, All Things Pakistani and the student operated Emergency Times were hot sites with pictures and videos complementing the latest stories. Bloggers comments accurately reflected many of the discussions that were taking place in offline environments as well.

The Pak Tea House in Lahore, which used to be a hub for intellectual discussion mostly by members of the progressive left movement before the mid eighties has been reborn as PakTeaHouse.wordpress.com. It is a successful example of an old physical space that becomes an ideology for a new generation of Pakistani intellectuals. In 2007, the "Pak Tea House is a little corner in the blogosphere that will endeavour to revive

the culture of debate, pluralism and tolerance"[2]. It can also be said that maturation of the media in the months before 3 Nov 2007 had turned every small tea house with cable television into a "Pak Tea House".

The student body at LUMS, a private management university participated vociferously against the "emergency" imposed by the President. Through their peer–to–peer networks they had access to the Pakistani Diaspora and a global audience along with local students. A document circulated by them on street protest strategies had its origins in Harvard University, USA. Stickers, slogan t-shirts, facebook logos, online petitions and other newer forms of active protest were witnessed as a result of a more image conscious and technologically active generation being involved. Street graffiti which is an old form of protest in this country was given a new touch by a group of artists from Karachi who devised new graffiti symbols as their contribution to the peaceful protests that were taking place all over the country.

At the beginning of every rally and candle light vigil for restoration of judges and media freedom, poignant quotes from Pakistani poets from more than two decades ago would be recited. From the progressive writers movement in colonial times until now, the poets of Pakistan have played a significant role in questioning the state for its mistreatment of the people. Many of them suffered greatly by being censored or forced into exile. Youtube has played a pivotal role in reviving their couplets amongst new generations of Pakistanis.

In order for the media to continue supporting grassroots movements, laws which keep ownership of media sources non convergent and close to stakeholders, away from the hands of foreign buyers, need to be enacted. Audiences need to be able to differentiate between gimmickry and truth. Above all, the media needs to be neutral, responsible and free.

We shall see
Certainly we, too, shall see
That day which was promised,
Which was written in God's ink
We shall see[3]

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2 http://pakteahouse.wordpress.com/about/

3 Verse by legendary Urdu poet Faiz Ahmed Faiz

Reflections on Karachi — Past, Present and Future

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Images by Students of Indus Academy, Karachi Pakistan
http://unesco.sjsu.edu/gallery/070110/malik/index.html

The concept for this project was not only for our group to come up with a final art piece about our city, but how to do it using techniques that others could also use and come up with similar solutions to their design needs. That is one aspect of sustainability. Thus I conceived the whole five weeks that we would have to work on the project as a constant give and take between myself and the other students, respecting each other even if ideas and values are different and creating a final piece of work that is new and truly has impact. Not only have the young artists learned from me during this time, I have learnt a lot about a generation that has seen much more violence and blatant disrespect another in close surroundings and on media. We have grown together and I hope that a lot of the excitement and vigor which filled our sessions is visible in the final piece. I had to play the part of editor as there was so much material that we came up with that it was impossible to include everything but the attempt has been not to exclude anyone yet show each person's style and message in the context of one piece about the city of Karachi.

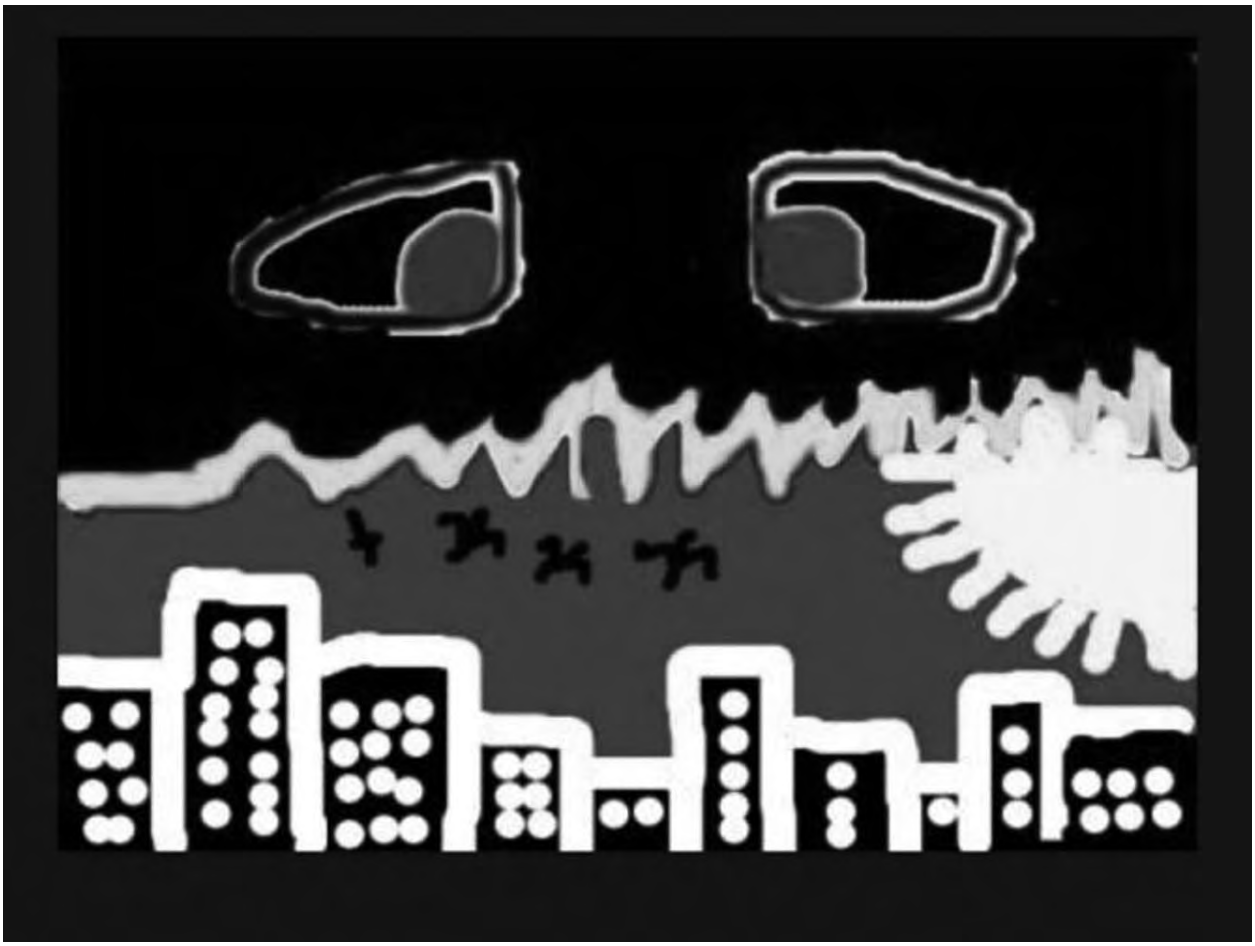
These days, the city of Karachi is receiving a lot of funding from the government to give it a face lift, but a lot of core issues have been ignored like adequate water, sanitation, pedestrian crossings and project planning. This results in power breakdowns that last hours, traffic jams that never end, dust and unfinished drains everywhere. In a city of over 25 million people this means a lot of serious suffering. In addition to this, Karachi is often targeted by unknown bombers and the sounds of explosions and sirens are always taken with a sign of yet another tragedy. How do young people growing up in this kind of environment react when they are asked to represent their city first in words then in images and sounds?

The final sequence of images for the project submitted for the Unesco Digiarts Awards 2007 is a result of a five-week workshop held by me, a digital artist and scholar at the Indus Academy school. Ten teenagers attended the workshop which was conducted after Doyun Lee gave me permission to participate in this project with the young artists who were interested. The school administration allowed us to use the school premises after school hours on Fridays from 12.30pm to 3.30pm. The procedure for selecting the students was a general announcement at assembly followed by distribution of parental consent forms and a few details of the Digiarts website and award to interested students. All ten who showed up the first day were registered. No fee was charged for this workshop and the Indus Academy computer lab was at our disposal for the weekly meetings.

From the start the students, aged between 11 to 13, were introduced to UNESCO, the digital arts portal and the Sharjah Biennial. I described how we would be working as a team to create the final piece and that I was not a teacher to them but a mentor who would be teaching them the tools and then leaving them free to explore. This created a sense of purpose to the whole workshop and incredible motivation among the students to suggest ideas, help each other out and be vocal in discussions. I feel this in itself was one great remarkable achievement as far as this whole project went. Getting a group of highly distracted students to give 100% attendance each week and come up with incredibly well thought out pieces, while juggling other classes, has been really rewarding for me.

Also realizing the limited amount of creative and analytical thinking encouraged in the tight school curriculum I made it a point each week to show the students digital or electronic artwork recently displayed at exhibitions and symposiums worldwide. We would view slides shows and I would ask the children at the start of the workshop to comment on each piece, "do you like it?" "what techniques have been used in this piece?" Many times I got this question "Miss, how can this be art?" These critiques helped greatly for the students to comment on each others' work and figure out which style they wanted to follow for their own pieces.

I followed the Unesco "Young Digital Creators" hand book as far as the lesson plans and descriptions of phrases such as "copyleft" were concerned so that we



could move fast and cover all that was needed to cover in an introductory digital creation session. The book was invaluable to me as a resource.

I set up a blog at http://malikimage.spaces.live.com/ and handed out my email address to the workshop participants so that we could all keep in touch over the days that we were not meeting. In addition, references to websites were given out at each class which would help the artists develop their skills or create new art work. This openness in communication leaves a lot of room for artists to work on their images whenever they were free. All kinds of image collection methods were described and encouraged, from free hand drawing then scanning to mobile phone captures, newspaper cuttings etc. also I explained to everyone the issues surrounding copyright and how someone else's image if used either had to be credited or changed in such a way that it did not look like the original any more. This could be done either by cropping, changing the hues, cutting and pasting, writing over, etc.

For the students who had no access to computers or digital cameras at home, I provided my USB, digital camera and sound recording devices in school. I also had a CD of the YDC handbook with the softwares:

Karachi, city of...

Past	Present	Future
City of Abuse	City of Ignorance	City of Enlightenment
City of Order	City of Innovation	City of Progression
City of Peace	City of Racism	City of Peace
City of Destitution	City of Corruption	City of Living Hell
City of Oppression	City of Hope	City of Poverty

Tux paint, GIMP, Audacity, Inkscape which I asked the students to pass around and copy on their computers at home as it was freeware.

One student, Azaan was a musician and was very keen to compose a piece to go with our final images. I gave him the go ahead and at each session he would play the section he had composed for us. He would walk around and view everyones work so that he had an idea of what kind of images were with the music. I think the final result is astounding.

One Friday, just as we were about to start our computer work, the lights went off and I was told that they probably would not come back on till evening. All the school staff had gone for Friday prayers so we had a really hard time finding someone who could go and get diesel for the generator. Once the fuel arrived, the switchboard caught fire and then it was confirmed that even a backup supply would not work. This is quite normal in Karachi so none of us were too fazed by this, just disappointed. Rather than waste time, I organized a storytelling session where each person told their story about Karachi and how they ended up in the city. I started off with my own story. As we went around I was amazed to learn that 6 out of the 10 students had moved to Karachi from various countries less than 5 years ago. Each of them described what they liked — the open spaces, no boredom, lots of events, and disliked — pollution, lack of freedom of movement and construction everywhere about the city. I thought about the displacement that so many young students go through as migration becomes a fact of life in the new order of the world. How does it affect them, how do they adapt, how should schools cater to make adjustment easier for students like these? While our story session was going on, a beautiful deer was spotted running past the computer lab. Everyone, including me with my camera, rushed out not believing our own eyes as deers are common to this area but not at all in the city! Turns out one of the staff members had brought it and was going to take it home that day.

A back up plan is very necessary in a place where it is possible that technology will fail you. We must rely on technology but not to the extent that without it we become silent and unheard. Human struggle can be expressed in numerous ways and we must remember all of history and at times improvise when necessary. That is another aspect in creating sustainable environments. They cannot be rigid but have to evolve when the need arises.

This piece was presented also as artists submissions for the Web Biennial 2007 (to hear piece with sound please visit link in internet explorer).

Names of student Artists:
Angelical Huang
Azaan Bakhtiar
Bilal Nisar
Sahar-Fatema
Tanya Tanveer
Urmia Abbas
Murtaza
Hannah Dehradunwala
Ali Abbas
Arisha Akhtar

Accompanying Picture made by Murtuza

On Augmented Reality-Enabled Social Network — Traces of Pratitya-samutpada (Interdependence)

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This paper examines Eggpass, an augmented-reality social network trace, and its relationship to the doctrine of the Buddhist principle of Pratitya-samutpada.

Definitions

Augmented-reality usually refers to a combination of digitally-invoked information overlaid upon real-world information, affording the user a richer understanding of the surrounding environment. The machinery used within this field can be as mundane as automobile GPS navigation systems combined with online databases (ostensibly to locate the nearest Starbucks), to see-through head-mounted displays[1] for applications as far-ranging as air traffic control, brain surgery, construction work, military and gaming applications, to spatial-sound-tagging systems for sociable media projects[2].

The Buddhist concept of Pratitya-samutpada states that the existence of conditions brings on the existence of other conditions. It describes an interconnected and interdependent reality where all phenomena (actions, conditions, results) are fundamentally connected in some way. All human action affects perceived reality. All actions are social actions. “Phenomena” ranges from personal desires, emotions, to world-changing events.

Pratitya-samutpada suggests the cyclic *Twelve Links of Conditioned Existence*: Ignorance -> volitional impulses -> consciousness -> name + form -> six senses -> contact -> feeling -> craving -> clinging -> becoming -> birth-> death (sorrow).[3]”

The following concepts of *anicca* and *anatta*, that "things" are transient and have no intrinsic entity but are perceptually-based also inform art. Found in the Buddhist literature illustrating the above:

"What we know as a 'bed' comes from the collection of numerous components to assume a known form. A 'bed' other than these components does not [independently] exist. ... but must relate to other concepts, such as 'sleeping,' a plane surface, a base, an empty space..."[4]

This random example brings to mind the artist Felix Gonzalez-Torres' *Untitled* (1992), 24 billboards in New York City featuring an image of an empty bed.[5] Viewers familiar with the artist read it as a commentary on the loss of his partner to AIDS; we bring our own ideas to all that we perceive. Our cycle states that conceptual thought brings upon craving, clinging, and then later, suffering.

Interconnectedness and Interdependence

These concepts can be applied across disciplines. In mathematical terms, X brings about Y. From the Heisenberg Uncertainty Principle to the parable of Indra's Net, the hardware of the internet, the activist phrase "Think Globally, Act Locally," to the present practice of mapping social networks online, we see manifestations of interconnectedness everywhere.

With the perceptual enhancement that augmented reality affords us, our hope is to enable the users of our system to visualize actions and repercussions. Perhaps the ability to view or hear or feel the consequences of our actions would somehow enhance our understanding of the interconnectedness of the world around us.

Eggpass I

Eggpass (2004), initially inspired by Stanley Milgram's work on the so-called Small World Problem, was designed to be an open-ended trace of personal connections that would, over time, generate a complex map of social networks. One dozen hand-sculpted eggs were imprinted with the URL eggpass.org and a unique id number and then distributed to twelve individuals along with a simple set of instructions: pass the egg to someone with whom you are on a first-name basis; visit eggpass.org and input your egg number and location (personal comments, photos, name and email were optional). Eggpass.org [image above] displays this information in twelve columns ordered chronologically, charting the progress of an egg as it is passed from person to person.

The shape of an egg was chosen for its familiarity, tactile comfort and symbolism as that of initiator, seed, or representation of genesis. An object as the centerpiece of the project was essential; our desire was to join the physical realm to the virtual, to merge the intimacy of face-to-face interaction with the borderless expanse of digital online communication. This work can survive outside the Web; an egg could be passed without being documented on eggpass.org and resurface years later when someone who may not even know the origins of their egg notices the website emblazoned on it and reinstates contact.

After almost three years of traveling the eggs became entities. Participants assumed that the eggs should be passed over great distances, exactly the opposite of the short, quick passes the creators expected. Eggs would go undocumented for months and then appear on a different continent. An egg, many passes down, was intentionally passed to a relative of one of the creators. Egg #11 was friendstered.

Eggpass.org now contains elaborate descriptions of passes with photos and short films of the eggs. One submission contains an animated GIF of the egg traveling throughout London being compared to various egg-shaped sculptures and buildings. The eggs begat stories, commentary and a linked community. In the terminology described above in the twelve links, eggs "became."

In April 2008, all eggs seem to be dormant. A colleague in Champaign, IL set about to trace (and acquire) the eggs and was never able to approach any final tree node. From personal interviews with participants, we have determined that the eggs had become personal objects of affection. People became *attached* to them.

Eggpass II

Eggpass I created feeling, craving, clinging, becoming. For phase 2, we wanted to explore the interconnectedness of all phenomena, not just people. We chose a subset of the twelve links. Feeling, craving, clinging can all be determined through mood-detection and video devices. Domain of experiment could lay in geographic happiness-indicator databases.[6]

For a preliminary sketch, we propose a social tamagotchi with a dormancy indicator. When the egg has been cold (un-handled) for a certain amount of time, we force a pass. The egg-holder should be compelled to practice the act of giving (non-clinging) with the egg.

We do not specify that the passee be an acquaintance, for if interconnectedness is true, it is also relevant for strangers. A pass to a random individual highlights this. In addition, the act of passing from stranger to stranger should reduce attachment to the egg. And finally, we do not ask for names of individuals, since identities are transient issues.

There are two aspects to this work, and one is the performative, transactional interface between the passer and passee; at once the practice of non-clinging and also the practice of social interaction. The second aspect is the culling of data which could be derived from international GPS monitoring systems.

The authors wish to thank: Mark Siderits, Karrie Karahalios, Frances Kuo, Stewart Dickson, Mat Yapchaian, Ankur Kalra, Sandra Hammond.

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3 http://www.buddhanet.net/cmdsg/coarise1.htm accessed April 26, 2008. Ven. P. A. Payutto

4 ibid.

5 http://www.moma.org/exhibitions/1997/dannheisser/commentary.html#felix accessed April 25, 2008.

6 Veenhoven, R., World Database of Happiness, Erasmus University Rotterdam. Available at: http://worlddatabaseofhappiness.eur.nl Accessed at: 4/26/08

Animated Documentary: Technological Change and Experimentation

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In the theory of cinema, technology in audiovisual production is approached by various authors such as Jean Louis Baudry (1970), Jean Louis Comolli (1975), David Bordwel (1997) and Salt Barry (1992), but we are unable to enumerate many who do so in relation to documentary cinema. Curiously, although the documentary is a cinema anchored in the device, which legitimizes its images, such as reproduction of reality, the technological issues are hardly discussed in terms of its theory. It is exactly this relation among the means of production utilized in the making of the documentary — whether they bear this denomination or not — and the modes of representation and styles resulting from the technology of each era that we intend to delineate briefly. More precisely, the periods of the Early Cinema, the vanguards and the British school – 1900-1930, the 1960s, and 1990s (new media and the 3D documentary).

"Actualities" are considered the precursors of documentary cinema, and it is in the context of its production that we observe a certain change in style in relation to the standard of the period from 1895 to 1907. At this moment, there was still no division between fiction and documentary, but we could already perceive different forms of utilization of the cinematograph technology. In general, the films of the Early Cinema, presented an "Aesthetic of Astonishment", as much in relation to form — a single take made with a frontal camera and long shot — as to content, which used to imitate vaudeville aesthetics with decapitations, apparitions and disappearances, etc. Gunning created the concept "cinema of attractions", for explicated to presenting discontinuous visual attractions — moments of spectacle rather than narrative.

On the other hand, "Actualities" were already presenting movements, such as travellings shots performed from trains, boats (*George Town Loop*, 1903, American Mutoscope) and framings diagonal, entries and exits from the field (*San Francisco: Afterrath of Earthquake*, 1906, by Thomas Edison) that were ignored by other films of the period. Besides viabilizing the recording of real situations, the cinematograph was a reversible apparatus that operated simultaneously as a camera, copier and projector. Being light in weight and independent of electric power, it was easily transported. Louis Lumière and his operators traveled the globe recording and projecting the quotidian and historic events.

In the 1920s, we see some significant changes in relation to the cinematographic device. It is replaced by lighter cameras (Akeley, 1919, used by Flaherty in *Nanook*, 1922), but which function only for filming. The projection and printing now take place in different apparatus. Regarding the aesthetic aspects, there already exists a more structured cinematographic language based on Griffith parallel montage and the experience gathered by the Early Cinema (2nd period, 1907-1915, in the Gunning division).

In this context, alternatives to montage made in Hollywood (Russian Constructivism and Historical Vanguards) arise, but various Early Cinema resources will still be utilized: iris, animation of objects, appearance and disappearance tricks, etc. The lighter cameras were fundamental for the documentary in the same way as the new proposals for montage. As it was not tied by conventions temporal and spatial continuity, which governed the fiction film centered on one character, particularly in the classical Hollywoodian narrative (NICHOLS, 1998), the non-fiction film took advantage of the creative possibilities made viable by collage.

The works produced in this period are commonly known as vanguard, *avant-garde* in French. What will come to define the vanguard cinema are its formal and aesthetic preoccupations, and its production and diffusion conditions. As regards its formal aspects, the basic unit of syntax of the film, is no longer the shot, but the photogram, which receives every type of intervention (scratchings and paintings directly on the celluloid, collage and superimposition of materials, manipulation of the focus, fusions, speed and exposure alterations). These aspects are present in abstract cinema in greater intensity (*H2O*, 1929, by Ralph Steiner) as also in figurative and documental cinema (*O homem da câmera*, Dziga Vertov and *Chuva*, Joris Ivens, also in 1929).

The documentary in the 30s, mainly that of the British School, will be marked by attempts at definition as an autonomous genre. This process coincides with the introduction of a technology that represented the first revolution since the invention of the cinematograph: sound. The efforts of Grierson to define and popularize the documentary as an alternative to Hollywood led him to stimulate considerable experimentation with sound in the *GPO (General Post Office Film Unit)*, between 1933 and 1936.

Unlike fiction that used to seek technical domination of synchronism in the service of the dramatist, Grierson utilized sound in an expressive form in the documentary, whether fomenting the principles of collage through non-synchronic forms, or of counterpoint, as we can observe in *The Song of Ceylon* (Basil Wright 1934), *Pett y Pott* (Paul Rotha, 1934), *Industrial Britain* (Robert Flaherty, 1933), *Night Mail* (Harry Watt & Basil Wright, 1936). Grierson desired to go beyond the technical potential of sound reproduction. The final question posed by him is: "How must we use sound creatively? In what way will we go beyond mere reproduction of the reality allowed in technical terms?" (Grierson in HARDY, 1966: 157)

The invention of the cameras that capture image and sound synchronically in 1960 will be the next technological revolution. The appropriation of this technology leads to two different styles of documentary cinema: the American Direct Cinema and the French *Cinéma Vérité*. In American Direct Cinema, we have reproduction of reality without the intervention of the filmmaker at the moment of the filming, with total removal of all signs of the device and of the filmmaker (*Primary*, Drew, 1960). Obviously, the intervention in the montage is quite intense, including elimination of all vestiges of the device. In *Cinéma Vérité*, on the contrary, it is the filmmaker and the device with all their potential for creation and intervention, which are found at the center of the film: viabilizing encounters, confrontations and questioning about the very mode of representing the reality (see *Chronique d'un Eté*, by Jean Rouch, 1961).

The technological leap will reach its heyday in the 90s with computer graphics. The development of the computer graphic softwares begins back in the mid-70s, and, already, in the late 80s, it reaches a stage at which one can create almost everything with synthesized images. Every year, new techniques are developed: transparency, shadows, image mapping, bump texturing, compositing, particle systems, radiosity and ray tracing among others. (MANOVICH, 2004: 2).

Once again, we return to the question, raised by Grierson, of how to go beyond reprodution of the reality enabled by the state-of-the-art in technology? The big issue is that it already can no longer be regarded as neutral and holding an ontological truth, as was attributed to the cinematographic camera. The technology here is responsible for simulation of the same elements found in nature, but without the presence of a material device (the camera) at the place of the events. Now we feed a computer with data about objects, physical phenomena, spatial and temporal circumstances, and we have a virtual representation of an event that took place in "historic world". This is the basic principle of the animated documentary made with 3D softwares, like *Ryan*, by Chris Landreth.

Here the techniques and devices also allow reprodution of reality, and this is the option of some filmmakers who present a photorealist style (*Atmonia*, Stele Breysse and others, 2003). But it also allows more creative or psychorealist utilization, as Landreth defines the aesthetics of *Ryan*. As a beta-tester of the Maya software, by Alias Wavefront, Landreth tested all the possibilities of the software. In general, this potential is aimed at a representation that resembles the 35mm camera image, in order to fulfill the requirements of the major client, Hollywood. There is a tendency in the market that determines some paths to technology, but there is always the possibility of subverting its use. This is Chris Landreth's proposal in the animated documentary, *Ryan*. The latter was released in 2004, when he surprised the critics and spectators by his non-figurative aesthetics,

which the director himself termed "psychorealism". The discussion was accentuated precisely by the fact Landreth called his film an animated documentary. Considering that the basic presupposition of classic documentary cinema is figurative representation of the images captured *in loco* by the cinematograph camera, the animated documentary appears on the scene to cause a series of debates.

But what is animated documentary? Considering the term itself, in this coupling of two genres, not to say distinct fields, we have a difficult task ahead of us. The animated documentary may be defined as a film of real situations and facts recorded with electronic support utilized as a basis for subsequent intervention with animation that is often computer-generated. It almost always presents enhancement of subjective aspects of the situations based on the representation of the characters and scenarios.

Despite the variety of animation techniques that exist to date, we observe two types of animated documentary. The commonest, which has a certain tradition in the history of the documentary, is that which utilizes live action images along with animation. The second, and more radical, utilize animation resources throughout and present an animation as the final result. *Bicycle Messenger* (2005) is a good example of the former style, as it features images in the entire film, only the main character (the messenger) being presented in animation (digital rotoscoping). The latter style can be found in animated documentaries like: *Drawn from memory* (1995), an autobiography of animator, Paul Fierlinger; and in some films by John Canemaker, especially *The moon and the son* (2004) and in *Ryan* (2004) by Chris Landreth.

The attempt to define the animated documentary and understand its different forms of representation is valid to the extent that it legitimizes this trend in the context of documental production and strengthens the current that sees in the documentary a cinema project that enables experimentation via different technological devices.

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To See and to Touch the Light Source

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There is no image, in the traditional sense

Lev Manovich (2001) classifies the screen into four types: the classical screen, the dynamic screen, the real-time screen, and the interactive screen. He also takes the image on the screen into consideration. There is no traditional image on the real-time screen and interactive screen because the image is ceaselessly updated in real time. In his argument, although we often use the terms television "image" or computer "image," they are not really images. This raises the question: What is the image on the real-time and interactive screen?

Since the invention of CRT, we have been able to control electrical light freely and, accordingly we have continued to look at electric light in myriad ways. Any change in what we see is likely to be deeply related to the fact that we have been able to see the light source itself. We don't look at the image but the light source. This change in light might lead us to drastically change our interactive action with the environment. In this case, the drawing action, when combined with electric light, makes the screen interactive.

However, we don't have a theory of this new type of drawing. In order to consider the new drawing action, this paper focuses on Ivan Sutherland's Sketchpad because he connected CRT, a light pen, and computer in order to make a new communication system between man and computer, centered on the drawing action.

No ink, no mark

Sketchpad was created in 1963 by Sutherland as a comprehensive system of "Computer-Aided Design", a research project at the Lincoln Laboratory of the Massachusetts Institute of Technology in the 1960's. Sutherland (1966) describes the characteristics of Sketchpad as: "unlike an ordinary pencil, the stylus itself does not make any direct mark on the display. The computer is placed, in effect, between the 'point of the pencil' and the 'paper.'"

In a famous demonstration, Sketchpad displays the letters INK on the screen at start-up, but it is not physical ink but rather light radiating from the CRT. When the light pen captures that light, our drawing action starts. Light directly links the light pen and the CRT without making a mark in this drawing system. The CRT radiates light and the light pen receives it. The computer then freely controls that light. Here, light itself is the ink and the mark in a figurative sense. As a result, something is drawn on the radiant surface without a mark. Yet, what makes it possible to draw something with light itself?

Looking at the light source

We must think about how the Sketchpad is able to draw something using light itself without a mark. For that, we must define what is the radiant surface of the CRT. In order to achieve this, we will first refer to George Berkeley's theory of vision. Berkeley (1963) indicates in "the new theory of vision" that what we see is made up of two senses called vision and tactile perception, which are combined by our experience. However, this suggests that there is also a rupture; our experience is merely one of holding vision and tactile sense together in what we see.

Jonathan Crary (1992) pointed out that 19th century physiologists handled these two senses as different things in what we see. The rupture suggested by Berkeley became an actuality. As a result, we cannot believe that what we see is something tangible, it's just "light, shade, and colors"(Berkeley, 1963). However, a new question emerges here. How can we fill the loss of tactile sense with light?

With that, we will consider the properties of the light from the viewpoint of J.J. Gibson's ecological optics. The most important aspect in J.J. Gibson's ecological optics

(1979) is “the information in light.” He wrote that the light source shows minimal information, which presents a “presence or non-presence”. It gives us indeterminate information which cannot be clearly analyzed to say what is there. Therefore, if we can precisely control the “on/off” of the light source, we create a presence of something by only ‘light, shade, and colors’. This makes up for the loss of tactile sense. The CRT can manipulate and show the flickering of the electrical light source. Therefore it is a device which completely controls the indeterminate information and represents “the presence of something” by the flickering of the light source. Moreover, the simple format of turning light on and off is the same format as the binary code, the format the computer uses to handle information. The computer, then makes the CRT control its own flickering of thousands light sources.

To touch the light source

Man creates “the presence of something” from the information he can perceive, although the viewer cannot usually perceive everything, due to the minuteness of flickering light. However, with Sketchpad, users have the benefit of a light pen as a sensory perception tool, which can respond to the flickering of the light source within minute intervals, which cannot be perceived by man alone. Therefore, the minute flickering of the light source makes two circulations of information: one is for the human and the other is for the system. In this way, everything necessary for the computer-mediated drawing action is controlled by the minute flickering of the light source in Sketchpad.

According to Paul Virilio (1994), this minute flickering of the light source, which cannot be detected by humans, has created new energy and, simultaneously, presented the problem of a new reality. Although this problem appeared originally with the invention of the photograph, the CRT and computer make it obvious because they operate at the speed of light. Sketchpad connects these two devices via computer in order to create a new reality of drawing.

Looking into the minute flickering of the light source by the light pen on Sketchpad, the relationship of “draw/drawn” determines “the presence of something” presented by the light source. This presence of something cannot be reached or touched by humans because it exists only at the speed of light. In other words, we don’t draw anything which we can touch. There is only a mosaic of the minute light source flickering via CRT, and the only thing we can do is watch it. However, Sketchpad can touch “the presence of something” by controlling capability of the light source. This makes it possible to re-set our sense ration between of visual and tactile. As a result, we receive a new reality: Drawing with light.

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The prelude to the Millennium: The backstory of digital aesthetics

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Introduction

The artist and scientist have been depicted opposites since Michelangelo claimed that Leonardo da Vinci was wasting time with foolish inventions while his art suffered. However, the artist taking on the role of the researcher has precedent. In the 1960s E.A.T., Experiments in Art and Technology, led by Bell Labs' engineer, Billy Klüver, aided artists such as Robert Rauschenberg in pushing the avant-garde to utilize technology. Sullivan (2005) asserts that the time has come to examine art as data and artistic practice as research. The digital revolution produced a new artist model that has been described as a Merlin (Hickey, 1997). Perhaps a more plausible model is the artist-scientist creating a paradigmatic aesthetic shift.

An aesthetic shift

The writings of Youngblood (1970) and Enzensberger (1974) were concerned about the lack of interactivity in media consumption. Enzensberger maintained that if the receiver is passive, they are not exercising control over what is being projected upon them. Darley (2000) postulated that there exists a paradigmatic aesthetic shift that has taken place that coincides with the development of digital imaging. Today's spectator demands real-time, high resolution, and simulated hyperreality within which she has control. These controls shift our notions of power and are more radical than the depthless surface play that Darley (2000) suggests. There has been an explosion of new media exhibition venues including the Internet, personal computer, and cell phone.

The spectator is increasingly choosing a mono-to-monitor experience with media. From the 1960s through to the 1980s, there was the emergence of the rock concert and the movie-goer; reinforcing an idea that people desired a mass-collective experience. This human need has shifted towards a removed social network experience, such as *MySpace*.

What's new about new media?

What is new media Art? Manovich (2001) answers this question by defining it as the "…digital material itself, its material and logical organization" (p. 11). Manovich's argument is that the human-computer interface is a cultural interface. The ability to communicate and socially organize in new ways subverts previous models of information distribution.

Magda Sawon, Postermasters Gallery Co-Director, stated (April 7, 2003) that,

> "There are specific things to new media art, for instance you cannot make a nonlinear painting. It is very different when someone actually works with the parameters of a medium than simply outputting through a medium." (April 7, 2003, Interview).

Bitstreams, curated by Larry Rinder, an exhibition in 2001, was dedicated to the digital impact on American contemporary art. The point was made that to be a digital artist is to be a hybrid.

> "The lessons of the video artists of the 1960s and 1970s have become so widespread that they no longer pertain solely to electronic media as such. The lessons of self-reflexivity, truth-to-materials, openness to media culture, and the freedom not-to-paint have become absorbed into virtually every dimension and media of art practice. Even in the realm of painting, artists these days paint with 'the freedom not-to-paint'." (Rinder, September 22, 2002, Personal Communication)

Cross-disciplinary fertilization combined with new tools of manipulation have prompted collaboration in new media works. Collaborations happened well before the pixel. Similarly, the notion of interactivity is not novel to the Internet. What is new is the ability to integrate media and have a global network for distribution, collaboration, and research.

Illustration 1. *Hannigan Cyborg*, **digital jpeg, 500 x 720 pixels, 2006, Redbull_UK**

The body politic

Haraway (1991), a cyberfeminist, spins a utopic myth of the cyborg:

> "Biological organisms have become biotic systems, communications devices like others. There is no fundamental, ontological separation in our formal knowledge of machine and organism, of technical and organic. The replicant Rachel in the Ridley Scott film Blade Runner stands as the image of a cyborg culture's fear, love, and confusion. [1]"

In this new world order, homework economy equals technocracy; sex is genetic engineering; and hygiene is maintained by psychotropics. Haraway sees the cyborg as a savior for a world beyond gender. In the case of *Bladrunner's* Rachel, she is questionably empowered, as she is raped by Harrison Ford and has a preset termination date. Cyborgian visualizations, such as in Illustration 1, repeatedly vandalize the female form for techno-erotic and violent ends. These cyberpunk fantasies have not shifted the poetic association of death and the maiden depicted throughout art history (Wolf, 1995).

Portable assistants, such as the cell phone, have developed new body-machine relationships that qualify us as cyborgs. *SecondLife* and *MySpace* are examples of sites dedicated to social interaction, in which you place your avatar representation into a database that distributes information to others. Whether painting, film, TV, or cyberspace, the act of psychologically projecting into virtual relationships removes you from your body and enables an alternate experience (Turkle, 1995).

Requiem for the consciousness industry

In new media there exists a post-production phase that distinguishes this group of artists as manipulators of the real. The new media artist may not make the raw data themselves; they may sample it. Enzensberger stated, "cutting, editing, dubbing -- these are the techniques for conscious manipulation without which the use of the new media is inconceivable" (in Handhardt, 1986, p. 121). The modernization of art for mass consumption liberated it from function and ritual (Benjamin, 1968) and made it both democratic and capitalist propaganda. It allows the receiver to float in a miasma of decontextualized symbols where signification becomes criss-crossed and re-associated. The result is a requiem for the consciousness industry, in that people search for their own identity through what is projected onto them.

Artist-researcher model

Hickey's (1997) disbelief in the sunset over the Vegas strip sums up art as about magic, beauty, and illusionism. If this were true, the new media artist would be nothing more than a magician whose works are puff, smoke, and mirrors. Instead, artists incorporating post-production practices provide critique on the technology they use and actively create knowledge. There exists advocacy for the artist as agent of social transformation and for art production as a form of research in Youngblood's (1970) writings, which sets solid precedence for Sullivan's (2005) argument that artistic practice is a form of research.

The mediaspace has engulfed all of us with computer access; reality has been fused with the virtual. The aftermath of September 11th created paranoia propaganda such as "if you see something, say something" posters requesting information about your neighbors.[2] Google™ has street views of any location adding to our sense of

Illustration 2. Facebook.com entry, retrieved June 11, 2007, courtesy of account holder.

remote-control. Millennial youth have responded to the private being public, 61% of youth aged 13 to 17 have online profiles (Nussbaum, 2007). The need to connect to others has outweighed our culture of fear (see Illustration 2). Wolf (1995) asserts the need for cultural studies, "to use those theories that seem to work when exploring the cultural formation of identity and to work with the bricolage of cultural events and moments through which the experience of culture is mediated and in which it is encapsulated (p. 35)." The amount of personal fragments available to the researcher through online social networks is tremendous. These archives provide the evidence of identity formation impacted by digital culture. What appears as diaristic exhibitionism is perhaps vital cultural data that needs to be mined for the benefit of a democratic future. It is this intersection of digital lifestyles, metaspaces for personal annotation, social networking, and cultural production that offers the artist a role as researcher and resurrects the avant-garde.

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1 Donna Haraway. 1991. *A Cyborg Manifesto.* see http://www.stanford.edu/dept/HPS/Haraway/CyborgManifesto.html

2 MTA Eyes of New York Campaign, see http://www.mta.info/mta/news/newsroom/eyesecurity.htm.

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Flora Electronica:
A Media Performance Space Across the Physical and Virtual Worlds

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Physical/digital media spaces

Virtual spaces have long been projected into, evoked by and intertwined throughout our physical environment. Wall paintings provide windows onto alternate realities; statues capture imaginary scenes at particular moments in time; theatrical plays recreate fictional scenes on constructed sets. Cyberspace is a newer kind of virtual world, where human imagination can exercise its creative and artistic capabilities. And while digital interactions today remain dominated by a limited set of interaction portals (desktop PCs, mobile devices), emerging sensor technologies integrated into physical spaces/artifacts provide opportunities for our physical lives to feed into computationally-mediated virtual worlds, which in turn can feed back into our surrounding environment.

Flora Electronica is a collaborative artwork created by artists and researchers during a course in tangible media arts. This playful artificial/computational garden is a stage where spontaneous media performances unfold, manifested across both the physical and virtual worlds. The emotional tone of the space is set by the real-time perceptions/interactions of a participating audience, both local and remote.

Media arts and technology in education

Technical research and innovation can create new opportunities for artistic expressions and experiences. At the same time, emerging ideas and trends in arts and culture can help to steer the development of emerging technologies in directions that can be of general benefit to society. The past decade has witnessed a rapid growth in areas of research such as tangible and ubiquitous computing. Underlying these trends is an increasing interest in how emerging technologies can be used to support stronger connections between the physical and digital worlds. These research interests are also affected and reflected by evolving trends in media arts, which are increasingly incorporating practices that bridge artistic expression with tangible interaction technologies.

The creation of tangible technology-based art works is an inherently interdisciplinary practice, spanning across a potentially large number of skill-areas, such as visual arts, design, architecture, engineering and computer science. As such, successful tangible media arts projects require collaboration by individuals from these and other disciplines and/or participation of individuals who are themselves well-versed in multiple disciplines at once.

The Experimental Media course in the Digital Media program at Georgia Tech enables students to develop the critical, intellectual and creative tools necessary to understand and work at the developmental stages of emerging technologies. The course focuses on physical computing and the construction of hybrid physical/digital spaces through the design and creation of large-scale tangible media artworks. It attracts students from a broad range of backgrounds, ranging across computer science, engineering, arts, design and architecture.

In spring 2007, the Experimental Media course focused on the development of a hybrid physical/digital performance space called Flora Electronica, created for a public exhibition at the end of the semester. Students

in a user interfaces class at New York University collaborated with Georgia Tech to create web interfaces allowing remote audience interaction with the piece.

Flora electronica: design and implementation

The inhabitants of the artificial garden are reactive plants equipped with sensors and actuators, which invite visitor interaction and enact captivating robo-media performances. The plants are clustered into three groups with different personalities: sociable, shy and curious. They respond to visitors through light, sound and movement, influencing the overall emotional tone of the space. Through data capture, the garden maintains an online presence in applet-based web interfaces. In addition to providing a virtual representation of the activity in the garden, these connected spaces allow remote visitors to influence the physical garden from afar. When visitors (both local and remote) coordinate their interactions with the plants, the responses of the individual clusters intensify, ultimately resulting in a synergy of movement, sound and light that is displayed both physically and virtually.

The physical elements of Flora Electronica consist of three large circular mounds, each with a scrim overhead and containing the clusters of plants. Software was developed to drive audience interactions with the piece, and web applets enable the participation of remote audiences. The components of the piece are:

- ***Mounds***: Each is four feet in diameter and contains three clusters of three plants. The mounds have different personality types that determine how their plants react to nearby visitors: sociable, shy or curious. Motion tracking sensors and microphones allow the plants to respond to visitors nearby. Speakers inside the mound provide audio for the piece: a low ambient soundtrack when activity around the mound is low, and increasingly loud/complex sounds themed according to mound personality as the activity level increases. When the activity level around all three mounds is high, their audio tracks synchronize across the space, providing a climax for the piece.

- ***Plants***: Each plant consists of a long white stem and a fiber optic head, illuminated by a bi-color LED. Groups of three plants are arranged on an acrylic disc, mounted on a moving arm, driven by three servo motors to provide orientation and height. The plants grow, turn and glow in response to the movements and voices of the visitors who approach them, and also in response to remote events from visitors in the networked spaces.

- ***Scrim***: Each scrim is supported by a pole in the center of its corresponding mound and acts as an overhead shelter for the piece, providing a sense of spatial completeness. The scrim is made from translucent white fabric that allows colored light to shine through from two RGB LED lamps placed mid-way up the pole. The lighting for each mound is designed to reflect its personality type, and changes with the level of plant activity.

- ***Software***: A server-side application acts as a networked “brain” for the garden, and manages data communication between the physical and virtual garden spaces. A client program in Java runs on a PC inside each mound, and communicates sensor data to/from the server in XML form.

- ***Web Interfaces***: Data is also transmitted back and forth from remotely connected interfaces, which are realized as Java-based web applets. These applets are designed to be virtual garden spaces that visually reflect the physical garden and allow users to engage in remote interactions with the physical plants.

Gallery exhibition

The public exhibition of Flora Electronica took place in April 2007, at the Eyedrum gallery in Atlanta, GA, during the Listening Machines show. A second

Flora Electronica at the Listening Machines show, Eyedrum Gallery, Atlanta, GA, April 2007.

exhibition was held on the Georgia Tech campus, during the spring Digital Media Showcase, in May 2007. The first event was open to the public and around 150 people visited the exhibition over the course of four hours. The second event was by invitation and the attendance was roughly half that of the first. Both events were a great success for piece. They succeeded in engaging visitors and maintaining a harmony between the physical response of the plants, and the overall visual aesthetics of the performance. We were pleased to see that visitors established a connection with the plants over time, often choosing one cluster as their favorite based on its perceived personality. Given the time-restricted duration of the exhibitions, we feel we were not able to fully capture the potential of a remotely participating audience, and hope to further explore these possibilities in our future works.

Placing Space/Time Through Photography's Old and New Technologies

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Vision in motion and stereo perception are our biological ways of knowing the world. The static, planar image is a construction that we can build by projection through an aperture (the photograph), or by sectioning space, or with mathematical formulae. I propose that, rather than seeing it as a limitation, we can convey perspectival, and even temporal, relations in novel and formally economical ways with the still image.

In Jacques Henri Lartigue's famous photograph *Grand Prix 1912* the spectators and car wheels are stretched diagonally in a cartoon-like representation of speed and a reaction to it. His camera shutter sliced vertically across a large format negative, consequently images moved relative to the film as they were projected on its surface during a horizontal panning shot. His viewfinder kept pace with object of his primary attention the head of the driver, his father, as he passed stationary spectators, but the car wheel, close to the photographer, becomes an ellipse that leans to the right while the figures lean to the left. His still camera thus records motion (time x space).

James McArdle 2008 "Goad".
Chromogenic print

Motion perspective

When we first pick up an object, we turn it in our hands so that our sight and sense of touch are exposed to every part of it. The same kind of inspection is extended from this bodily scale into the whole environment as we interact with it. John Herschel was the first to note motion perspective: "Let any one traveling rapidly […] fix his eye steadily on any object, […] he will see […] the whole landscape thrown into rotation […] round that object as a centre". He emphasised that the observer must arouse two states of attention to be conscious of the effect (Herschel, 1833).

This notion of a visual kinesthestic is advanced by J. J. Gibson, who promotes the primacy of motion in perception as 'optic flow' or 'flow perspective' (Gibson, 1979) relating vision to his 'ecological psychology', a theory that recognizes reciprocity between animal and environment.

The train is a classic platform for the observation of motion perspective. The passenger, through the train window, observes a world in motion. Both move in relation to the other and yet the impression of the passenger is that the world outside is somehow frozen (de Certeau:1984). The carriage provided the most handy simplification for Einstein in explaining relativity (Johnson, 1982).

Such observations, repeated by a population of travellers, soon led to an expression of its emotional effects. Paul Verlaine's poem *La Bonne Chanson II* (Verlaine:1869), one of the first poems in any language that describes such a scene, evokes a vision which causes the poet joy, a projection upon the pivoting point in the landscape. This phenomenon is also recounted by Xavier Herbert who sees "…the stunted trees…spinning past…in endless gyration…." (Herbert 1963). He uses it to express his sense of the alien unknown of the outback landscape.

James McArdle 2008 "Gush". Chromogenic print

Where do the internal and external meet? In this research, I have extended these ways of looking initiated by train travel. Elements of the landscape are collected in pan-shots from the car window, then these sites are visited on foot to gather close-ups. I find that at close quarters swivelling the camera in a bodily and manual gesture, the movements effectively consolidate detail within the surrounding streak and blur and the painterly swirl, the vortex. The resultant print, especially when viewed with one eye, provokes a sense of depth and motion, of being *in* the landscape. The digital permits the evolution of this technique in documenting such a gestural landscape into a seamless triptych where a foreground close-up, medium shot and wide angled horizon are combined into a still photographic collage. Dirk de Bruyn responds,

> "I would submit that these are not random operations but document a bodily relationship to these spaces. They add an emotional register of meaning. One of the most effective of these images places the vortex within the dark hole of a group of mine shafts that tend to pepper the local landscape. It is as if the fluid landscape is being sucked into these holes. Is this an indication of a spent and unsettled landscape, a space in crisis, or are these the traces of emotion imparted from the body of the photographer himself? In such a way the personal and the local can be read in dialogue in McArdle's work." (De Bruyn: 2008)

The vortex of vision

The figure that emerges from this practical research is the Vortex itself, with a long history of association and resonance with the visionary in aesthetic and spiritual, mathematical, natural and scientific discovery. The form of the spiral, whirlpool or vortex, and the related Labyrinth, appear throughout art and literature and are also mystical symbols well known in occult circles. Bill Mitchell comments on William Blake's *Milton*, noting that "the Vortex serves as an image of the gateway into a new level of perception," for

> "the infinite does not reside in an obscure, transcendent realm at the 'vanishing point' of three-dimensional space, but is located immanently in the intense, dialectical perception of immediate 'minute particulars,' a process which is symbolized and embodied in the vortex" (Mitchell:1978)

Kevin Cope traces the pedigree (Cope:1992) of Blake's vortex from Descartes' writings on natural philosophy (Dioptrics:1637). Jonathon Crary links Blake and the proto-modernist Paul Cézanne's 'sustained attentiveness' when he says "William Blake and Cézanne shared a related understanding of the universe as perturbations and differences between centers of energy." (Crary:1999).

Conclusion

The discovery that an impressively strong 3-dimensional effect in a 2-dimensional photographic representation of natural outdoor scenes occurs when a single camera is directed around one point in the scene, thus drawing into relief the subject of attention and blurring the surrounding space, has important implications for understanding basic processes in 3-dimensional vision. For the development of new ways for generating 3D effects in motion and static representations of scenes we might well learn from photography's old technologies, as well as digital technologies of the static print, which have yet to release the full impact of their potential in the representation of motion and space.

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Dunedin Does Not Exist

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Of the 2,342,075 articles currently and rapidly increasing on Wikipedia,[1] the most interesting for us is the history of Wikipedia's origins, co-founded by Jimmy Wales and Larry Sanger in 2001.[2] By 2004 it had become clear that Wales and Sanger had unsolvable, contrasting viewpoints on the structure of Wikipedia's open collaboration model.[3] Most notable were fundamental differences on the philosophies of peer-review and self-management, arguably two of the guiding principles of Wikipedia's current success. While both agreed that 'open-collaboration' was the best model, Sanger proposed success through an expert-led culture closely managed by executive leadership,[8] Wales' belief was that self-direction through communal governance would warrant its own successes.[4]

This project aims to consider the wiki platform and whether it facilitates self-direction by collaborative researchers or rather requires executive management. Specifically, within collaborative art practice, can a wiki articulate a shift from traditional collaborative methods? Of course, collaboration is not new nor limited to the internet. Collaborative artistic practices were explored widely and by numerous artists in the 1960s and 70s, with groups such as Fluxus creating an international network and profile. Similarly in the 1980s collaboration or co-operative enquiry became particularly interesting to computer scientists. "Research in Computer-Supported Co-operative Work" was a term first coined by Irene Greif and Paul M. Cashman in 1984.[5] Further, contemporary public art proposes a collaboration between people and art through the use of public space as a site for experiencing art. It is widely celebrated in biennale culture where art floods a city affecting more than just an art audience.

One Day Sculpture is a New Zealand-wide contemporary art series consisting of 20 new place-responsive public artworks (across 5 cities) by a selection of national and international artists. The series begins in June 2008. Led by the Litmus Research Initiative, Massey University, Wellington, New Zealand and UK-based curator Claire Doherty (www.situations.org, University of West England), the project is realised in partnership with galleries and artist-run spaces around New Zealand. The parameters of each art project are that each commissioned artwork will exist for no more than a 24-hour period. The works will range from sculpture and installation *in situ* for 24 hours, to performance and itinerant interventions at moments throughout one day.[9]

The Blue Oyster Art Project Space in Dunedin,[10] New Zealand, commissioned three geographically separate artists to work collaboratively to create one piece of work for *One Day Sculpture — Dunedin* and proposed to use the internet to inform open collaboration. Querying how different perspectives and knowledge of a place affect site-specific sculpture, the internet becomes another site if you like, and the one we could share with geographically disparate artists. The network becomes a tool for connecting the local (and terms surrounding site-specificity) and the 'internationality' of the artists' practices promised by the project. To some degree we hoped to use the internet as a way of critiquing site

specificity, and in particular an art biennale culture of landing and briefly (or thinly) engaging in site in order to produce art. How much could this communication, documented via a wiki, 'thicken' our relationship with a distant and physical location? This paper specifically focuses on the online research period and presents an analysis of the issues raised by this method of contribution to a shared project with a geographically disparate community. The finished art exhibit will take place in Dunedin, New Zealand in December 2008.

Selection of artists

We defined our parameters through our selection of the artists in terms of both their familiarity with located and mediated art, and their proven ability to work with other artists collaboratively. Each offers a different perspective and knowledge-set of the project site. Douglas Bagnall[11] is a New Zealander who lived in Dunedin as a student. Adam Hyde,[12] another New Zealand artist while never living in Dunedin, was a regular visitor, and maintains connections with communities in Dunedin, while living in Europe. Walker & Bromwich,[13] having visited New Zealand one previous occasion, have never actually visited Dunedin. All artists have also previously worked in conscious ways with site, and with digitally mediated artworks. They each have exhibited in international contexts. Rachel Gillies and Caro McCaw as project curators also embody this relationship. Rachel arrived in Dunedin from Edinburgh, UK two and a half years ago, and Caro has lived in Dunedin for the last 20 years. In the group, the only person who had met everyone face to face prior to the online collaboration was Rachel. Some of the others knew of each other but had never met nor knew about each others' practices.

Space for research

Our original plan was to use a wiki to share an active research space, almost a pre-cursor for everything up to the actual work itself, but in reality we found it hard enough to get email responses from artists. We began an email discussion list as a shared but private conversational space to start addressing notions of Dunedin that might help us develop the project. The emphasis of the wiki was necessarily shifted to become a storage and archival space for the material we found, so that all the artists (and project team) would be able to add and retrieve from the wiki as a common database. This signalled a doubling-up of the iterative process happening in the e-mail list, being 'copied' to the wiki.

Experience and reflection

Many artists and designers work intuitively in an iterative process that includes application, experience and reflection. Graeme Sullivan argues that visual arts research is "dynamic, reflexive and revelatory".[6] The expanded time that is enabled through the use of a shared electronic space (e.g. wiki, e-mail group) across several time-zones and continents should therefore insist on a process of reflection. However, we identified that in the wiki model, the *communication* of that reflection is a separate problem. Expecting people who are in separate locations (and who don't know each other) to

communicate meaningfully about their own creative actions and reflections, was more difficult. A creative, iterative process requires application, reflection and then action. In an artistic collaboration, the action is usually the making of an artwork. In collaborative research, the action is the 'active research'; the precedent to the next application of research material. The iterative cycle could not be completed without that action — and in this case, did not reach the action stage due to ineffective communication. We understand that these artists all have a strong understanding of making art and are all familiar with digital processes, however, this does not equate to effective collaborative communicative processes at a distance.

People matter

The *One Day Sculpture- Dunedin* wiki started as a centralised repository to replace the physicality of the location, Dunedin. (Dunedin Does Not Exist.) We had hoped that similar to the Wikipedia model, the critiquing/ reflection would happen between the artists as a group and as part of their own practice. However, unlike the Wikipedia model, we found that executive management *was* required.

Some months earlier, Adam Hyde spoke as a keynote at a New Zealand Digital Art Symposium[14] and commented that "…a technical platform is not an automatic community…".[7] We realised that we had assumed too much. We had assumed a shared technical ability amongst our group, based on our own skills and knowledge about some of the group's members. We had assumed a community as involved as we were, at a very early stage in the project.

While all the artists were able to read and respond to emails, the geographic gap became a social distance with many personal matters unspoken. This in turn reflected a difficult creative process. In this instance, the wiki does not articulate a shift in the collaborative process, but a paradigm shift was required for the wiki to become an effective platform for a collaborative arts model.

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1 http://en.Wikipedia.org/wiki/Special:Statistics visited 9.39am 22nd April 2008

2 http://en.Wikipedia.org/wiki/History_of_Wikipedia visited 9.42am 22nd April 2008

3 http://en.Wikipedia.org/wiki/History_of_ Wikipedia#Controversies visited 10.08am 22nd April 2008

4 http://en.Wikipedia.org/wiki/History_of_ Wikipedia#Development visited 10.32am 22nd April 2008

5 Grief, Irene. 1988. *Computer-supported Cooperative Work: A Book of Readings*. Morgan Kauffman Press.

6 Sullivan, Graeme. 2005. *Art Practice as Research: Inquiry in The Visual Arts*. London: Sage.

7 http://symposium08blog.aotearoadigitalarts.org.nz/2008/02/23/adam-hyde-some-things-i-have-learned-about-tending-networks/ visited 12.35pm 23rd April 2008

8 In 2006 Sanger launched 'Citizendium' "the world's most trusted encyclopedia and knowledge base" where the "general public and experts collaborate, using their real names" with this very model. [6]

9 Additionally there is a project microsite www.onedaysculpture.org.nz where audience and artists can collect updated information on the latest artwork developments and public events.

10 http://www.blueoyster.org.nz

11 http://halo.gen.nz/

12 http://www.xs4all.nl/~adam

13 http://www.walkerandbromwich.org.uk/

14 Adam Hyde was a keynote speaker at the Aotearoa Digital Arts Symposium, 2008 http://symposium08.aotearoadigitalarts.org.nz/

Visualizing New Zealand: A Web of Sites

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Through examples of work made by New Zealand new media artists and television advertising designers, this paper examines the role of new media in visualizing contemporary models of place. This is experienced as a shifting identity of place and its social bodies, where both pre-colonial forms survive and post-colonial social forms emerge. One feature of contemporary New Zealand identity may be examined through an ongoing negotiation between two culturally different models of understanding landscape experienced by the two main ethnic populations. The Western model of seeing land as real estate was imported both economically and culturally during the European settler period and remains dominant. In contrast the Maori (indigenous) model of land, is understood as literally a part of the collective social body, connecting people through whakapapa (ancestral belonging or relationship) that may be traced back to atua (gods).[1]

This tension and the overlaying of these different models of place upon a geographically distinct set of islands forms an ongoing negotiation between cultures.

In this paper I suggest that examples from public broadcast media, and new media, can provide an opportunity for this negotiation to be communicated. Through the examination of stories and images communicated via public and electronic media, in specific works of art and design, we may witness how various positions are being played out. Furthermore through these examples we may recognise a third place, where new models of seeing things emerge.

A recent Air New Zealand marketing campaign for television and cinema values the importance of "being there". Produced by the Auckland-based office of ad agency Colenso BBDO[2], the brand campaign reinforces the emotional connection New Zealanders have with their national airline through a liberating sense of flight, celebration of the landscape and powerful moments of connection. One television commercial depicts a person working in a kitchen in Auckland. He walks outside to a jetty looking doleful. He then jumps into the air and flies the length of New Zealand (with backing soundtrack in te reo Maori) to land outside a landmark building in Dunedin, some 2 hours away by plane, to kiss his girlfriend.

Along with a close metaphoric association with New Zealand's landscape however, these television commercials draw more upon our familiarity with flying over landscapes in Second Life than they associate with cramped airplanes. These commercials use the themes of displacement and re-connection made possible by travel technology. However the visualization of these themes do not refer to airplanes at all, but the sense of disembodied flight made familiar by new media technologies, and popularized by online worlds and digital game play. The perspective is first-person. Empty plains and mountains roll out beneath us as distance is compressed to keep the story snappy. We see through the eyes of the traveller flying disembodied, above — but not too far above — the landscape below.

New Zealand artist Rachel Rakena's work *Rerehiko* (2003)[3] uses information and digital communication systems in very different ways. This digital video overlays footage of traditional Maori dancers from Kai Tahu Whanau, with a flow of digital texts collected from email. The dancers however are moving together underwater. The two fluid movements, of text scrolling down and overlaying dancers, both constantly moving and without fixed positions, create a powerful and evocative image. But further, these two types of images reflect ideas about the role of digital communication in contemporary Maori culture. As email travels through the network it produces and supports a collective culture and identity. Email creates a space akin to the traditional wharenui (meeting house) where a community meets and is maintained. Like cyberspace the metaphor of sea/water in which the communication occurs is specifically non-land-based. Rakena explores in this work how contemporary Kai Tahu (tribal) identity also shifts and flows. Using fluid motions and water as a metaphor Rakena's work references migration and journeying across the ocean.[4]

For this artist vivid visual connections are made between the experience of maintaining a cultural community online and travel, (not unlike the connections made with our Air NZ commercial) but Rakena focuses her travel experience through waters. For Rakena the space between traditional ideas of landscape and contemporary Maori communities creates a question, 'who are we without land?' [5]

Through these two examples we recognize a shifting identity of place both as a colonial construct or shaping of settler identity, as well as a framework for positioning (indigenous) Maori cultural beliefs in a contemporary New Zealand mediascape. These contrasting views both reside within the unstable, overlaying and contemporary ideas of what it is to live in Aotearoa/New Zealand.

The idea that space can be actively and socially produced is explored by Marxist sociologist Henri Lefebvre. He writes:

> We are confronted not by one social space but by many. … Considered in isolation such spaces are mere abstractions. As concrete abstractions, however, they attain 'real' existence by virtue of networks and pathways, by virtue of bunches or clusters of relationships. Instances of this are the worldwide networks of communication, exchange and information. It is important to note that such newly developed networks do not eradicate from their social context those earlier ones, superimposed upon one another over the years.[6]

These two examples offer us different perspectives for considering our relationships of "being here", being in specific and located geographic and cultural spaces, and being immersed and engaged in mediated spaces at the same time. Lefebvre's comments from a time prior to the internet continue to have currency as overlaying glimpses of spatial practices are visualized through art and popular media. Both examples refer to land and not-land, and are seen as connected to immersive experience of media, communicated through alternative metaphors of flight, and swimming with traditional dance. I suggest we consider Lefebvre's clusters of relationships as occurring in this contemporary understanding of location. As processes, media can be read as dynamic operations working within social and cultural frameworks, not limited to their historical moment of transmission and reception yet embedded in the context of that moment. The metaphor of the internet or 'network' may be extended to include these contested experiences of landscapes and belonging. The network becomes a way to understand the separate and overlapping cultural complexities of "being here".

To connect various positions in a network of people and places is part of both the qualities of the internet and learned by us through a long history of travel technologies. While 'being there' is the message for the first example, its opposite is also true. '**Not** being there' or floating and resisting fixed positions allows new perspectives to be developed and in this case older cultural models to be maintained. To allow ourselves to occupy several spaces simultaneously is to acknowledge both the traveler in us all, as well as the affects that travel has had upon us. Travel is never innocent. For both the traveler and the people we meet are forever affected by our passing through or being visited. Through the erasure of geographically situated-ness electronic media both connects and removes us from place. And while this may be experienced as loss, it may also connect or re-connect us with ideas of place in ways that are familiar. For Rakena oceanic metaphors are specific. In the Air New Zealand commercial longing and loss are refered to using gaming metaphors, separating and connecting us simultaneously.

Artists, as well as advertising designers, through the exhibition and distribution of their work can show us relationships to familiar and less familiar ideas in ways that we may not have considered, drawing upon activities that both disrupt and allow us to consider new relationships to place, gathering, travel and home in our busy and constantly mediated lives. The examples demonstrate a simultaneous flow of different types of spaces in time to produce a notion of "New Zealand", augmented and inseparable perhaps from the media processes and products that represent this place.

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1 King, Michael. 2003. *The Penguin History of New Zealand. Auckland*. Penguin Books, p. 77.

2 Colenso BBDO website http://www.colensobbdo.co.nz/, accessed 7 July 2007

3 Rakena, Rachel. 2003. More information about this work available at: http://www.christchurchartgallery.org.nz/OnDemand/Audio/Collection/Works/128k-mp3/2005_38.a-b-128k.mp3, and www.intermedia.ac.nz/processingnovelty/papers/rachel%20Rakena%20Toi%20Re.pdf - both accessed 29 April 2008

4 Rakena, Rachel. 2003. *Toi Rerehiko*, unpublished Masters Dissertation, submitted in partial fulfillment for an MFA degree at Otago Polytechnic School of Art, p. 24.

5 Rakena, Rachel. *Toi Rerehiko*, unpublished Masters Dissertation, submitted in partial fulfillment for an MFA degree at Otago Polytechnic School of Art, p. 23.

6 Lefebvre, Henri. 1991. *The Production of Space*. English translation by Nicholson Smith, Donald. Massachusetts: Blackwell Publishing, p. 86.

MusicALife Composition: An Alternative Representation for Musical Notation

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How can computer-based systems help people compose music — especially if they have no prior musical training?

The history of composition is interwoven with the history of music notation. And for many people, learning and mastering conventional notation systems is itself a barrier to composition. We are investigating this problem by asking the question: what could music composition look like if it was invented now — in the age of computers — rather than during an era dominated by pen and paper? Our initial result is a system — *CompositionALife* — that combines insights from end-user programming and artificial life.

There have been a number of attempts to create computer-based systems that help novices compose music. In terms of helping beginners over the threshold of learning, using, or understanding aspects of conventional Western composition (e.g, notation, harmony, etc.), some have concentrated on ways in which computational representations and interfaces can make musical composition more accessible[8,4] while others the use of AI for intelligent tutoring.[6] There has also been work to extend the notion of "composition" beyond traditional model of using pen and paper to score a composition performed by others. This has included work that blurs the distinction between composition and performance[5] and that has concentrated on providing intuitive or learnable controllers.[2,7] One interesting approach is to transform the metaphor of composition: to conceive of it as, for example, creating and interacting with "artificial life" forms. Work in this has largely been for professional musicians (e.g., [1]), but there are some notable exceptions, such as Toshio Iwai's wonderful programs for children (*Music Insects*, *Sound Fantasy*, *SimTunes*, and *ElectroPlankton*).[3]

Transforming the compositional metaphor into the creation and execution of artificial life simulations has a number of advantages. In particular, much like the Logo Turtle,[10] it leverages some things that *users already know* (well-developed intuitions about creature movements, interactions, and the like). But having a system in which users can create and interact with sound-producing creatures runs the risk of being nothing more than a complex piano; that is, an instrument that produces sound via interaction, but does not otherwise facilitate the development of compositional intuitions. Furthermore, although it is important to add musical structure to the world-elements and behaviors, for a real-time system it will not be sufficient. To be sure, the results can be pleasing if the system has such things as melodic phrases associated with creature-movement.

But we believe that for compositional systems — as for systems that support artificial life research — there need to be mechanisms for specifying different complex behaviors and interactions, for pausing and inspecting a simulation, and for modifying different aspects of the simulation as a result of seeing/hearing it in action. We are also interested to see if the *ability to specify world-characteristics and behavior* (and observe/hear the resulting simulation) will contribute to the development of compositional intuitions and the creation of interesting musical works.

As such, we have been developing a *CompositionALife* system (an initial version was completed in 2004[9] and we have recently renewed work on it). There are two categories of intended users for the system: designers of compositional *genres* (e.g., Schoenberg's twelve-tone technique, boogie woogie blues, etc.) – and composers who would then create specific *works* within a particular genre. Using our system, creators of compositional genre create an artificial life "world" (of creatures,

environmental features and phenomena, and interaction rules) that provides an acoustic structure for artificial life simulations. Composers then create musical works by creating specific simulations.

For example, a genre designer specifies such things as the types of creatures and world entities and their attributes (e.g., position, size, speed, age). The genre designer also specifies the *musical* characteristics of different world locations and events (creature movement, meetings, reproduction, death, etc.). The combination of these features constitute a *CompositionALife* genre and are saved as a "world." A composer can then load such a world and begin to create a specific *CompositionALife* composition (simulation), specifying the number and types of creatures and world elements, their starting locations and headings, and the like.

The current version of *CompositionALife* raises several different kinds of issues.

In terms of end-user programming, the system needs quite a bit of work to make it more friendly. Currently, genres and compositions are created using a simple Logo-like end-user language — and users are able to inspect the state of different world elements by right-clicking on them. But we need to revise both the language and the GUI in ways that simultaneously increase the expressive power and the ease of use.

In terms of musical composition, although initial work with novice composers (as opposed to genre designers) suggests that the system is reasonably easy to use, it is not yet clear how well it functions as an aid in the development of compositional intuitions. In this regard, it may be that the structure and design of a genre plays a significant role. (Indeed, the relationship between a genre and a composition is something we find ourselves constantly confronting as we work on this system.)

Beyond that, work on this system is raising some interesting questions about music composition and end-user programming. For example, musical notation systems do not (usually? ever?) include a key feature present in most programming languages: *abstraction*. Although composers can and do invent their own musical notation systems, these do not typically embody any notion of allowing users to *build their own notational abstractions with the notation system*.

In many ways, that last point highlights one of our central hopes in working on the *CompositionALife* system: the intersection of artificial life and end-user programming can inform interesting reconceptualizations of musical composition — and transform the nature of the tools developed to support it.

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Fête Mobile: a Hyper-Local Self-Surveillance and Media Broadcast Experiment

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Abstract

Fête Mobile was the name given to a multi-purpose airborne media platform first exhibited at the Zero1 2006 festival in San Jose by Luke Moloney, Marc Tuters and Adrian Sinclair. Under this moniker we performed social experiments having to do with media sharing, surveillance and local-area media dissemination. Fête Mobile's center piece was a 6.5m long semi-autonomous blimp equipped with a file server, a video capture system and, in a subsequent iteration, an internal graphical projection system. Regarding the issue of surveillance, the project sought to increase awareness of public surveillance beyond a mere critique to propose individuals might become responsible for their own surveillance. An experimental internal projection system was later tested at nighttime cultural events, as a sort of local visual public address system. The assemblage was conceptualized as an extreme-low-altitude, hyper-local prototype of an art satellite existing for the same general purposes as many real satellites: surveillance, data communication and media broadcast in an artistic context. It is a continuation of the artist' research with the MC3 project for the MDCN.[1]

Figure 1: Fête Mobile ready for launch.
Photo Credit: Julian Bleecker

Localized self-surveillance

In our daily lives we are surrounded by surveillance. Closed-circuit television, traffic cameras, bluetooth phone tracking and RFID logging all contribute to a pervasive surveillance environment. Beyond merely criticizing this state of affairs, we encouraged the public to be aware of surveillance and to engage it directly. Fête Mobile proposed that the public take part not only in surveillance of those around them but in surveillance of self thereby questioning the narcissism inherent in surveillance.

Rather than trying to obscure its nature by hiding behind a smoked dome, the Fête Mobile presented itself as a highly visible surveillance system — a humorous embodiment of surveillance. A camera that drew attention to itself rather than tried to divert or hide from it. As a safe platform for aerial surveillance, coupled together with a video capture system and web server, Fête Mobile broadcasting a real-time feed from the onboard camera and made it available locally via a WiFi captive portal.

Media broadcast

Surrounded as we are by advertisement-filled public spaces, it can be difficult to find visual space that is not, at least indirectly, an expression of some sort of media. Advertisers are ever trying to find new ways of expressing their vision and promote their clients' message. An additional element of the Fête Mobile project thus involved experiments with visual media broadcast. As well understood by advertisers the world over overhead blimps serves as an excellent presentation backdrop for projected media. Once a potent symbol of the modern city's hope, today blimps in urban space serve principally as flying billboards. Towards these ends we attached a video projector to the inside of the blimp envelope, driven by the onboard computer. Yet, rather than broadcast advertisements, we chose to display

visuals from local media artists at outdoor nighttime events.

While simple to implement, this approach had its draw-backs. Only visible at night, the blimp's curved envelope only presented part of the picture to spectators, depending on their angle of view. Nevertheless, these presentations were well received on the whole.

Fête mobile lifestyle

For its initial debut at Zero1 2006,[2] the blimp was presented as part and parcel of a larger lifestyle branding concept. Inspired by the conceptual design of the Japanese collective, Maywa Denki,[3] the Fête Mobile lifestyle brand consisted of a branded clothing line, blimp-shaped frozen treats, or "blimpscicles" as we called them and whimsical uniforms for our ground crew. While the treats and clothing were well received, it was our uniforms consisting of brightly coloured jumpsuits and hard-hats that seemed to generate the greatest response.

Figure 2: Fête Mobile team. Photo Credit Julian Bleecker

Findings

As per our original vision, this project was very ambitious. Originally Fête Mobile was intended to be an autonomous surveillance platform that could be collaboratively-controlled via a web interface available via a local WiFi connection and a broader web connection. This, however, presented some great challenges. While a blimp is dynamically stable by nature and thus easier to control than other types of aircraft, making anything fly autonomously is very difficult. UAV development is the stuff of government-funded military/industrial programs, not under-funded artists.

In addition to technical challenges, we had to deal with logistical problems. Surveillance of public space is only interesting if said space is populated. More populated areas are inevitably more difficult to operate a flying machine in. While a blimp is easier to control and inherently safer than other classes of aircraft, it is nevertheless a challenge to fly around crowded areas without running afowl of the populace, local civil authorities or federal aviation authorities (the latter authority in the USA did, however, grant us permission to operate near the San Jose airport in 2006!).

Reception to the project has been mixed and very interesting. Many people have a seemingly emotional response to blimps, promted, no doubt, by collective memories. Some were fearful that the blimp might catch fire in a horrible Hindenburg-style disaster. A greater majority, however, felt an affinity to blimps, finding them very non-threatening, even friendly. The slow motion maneuvering and cartoony balloon-like dimension of the blimp envelope no doubt contribute to this reaction. The affinity of the modern blimp with sporting events and public summer festivals may also contribute to this positive emotional response.

Upon realizing that the Fête Mobile is a surveillance platform, a new set of reactions was expressed. Many of the people we presented accused us of having created the ultimate stalker tool, to which we responded that while anonymous surveillance by the public could create a stalking toolkit, the blimp was a conspicuous if not ridiculous tool for stalking. Some people were concerned about our creation of a particular surveillance system, and thus expressed concerned about public surveillance in general. This of course, is one of the key reactions the Fête Mobile endeavored to provoke. Still more were unconcerned about the surveillance of public space, argued as it often is to be important to public safety, but were concerned about the ability of the public to anonymously view said surveillance.

This embodies a key question we attempted to ask with this project: who owns surveillance of public space? While surveillance of public space is no doubt growing thanks to cheaper and easier to install surveillance systems, this surveillance data does not seem to be more publicly available. Insecure webcams and video sharing websites notwithstanding, it seems that increasingly surveillance data is becoming the private property of law enforcement and corporate security. Perhaps in the future socially-aware media artists and enterprises alike will endeavor to provide more and better tools for the public to participate in surveillance of their own spaces.

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1 Mobile Cartographic Command Centre, a project of the Mobile Digital Commons Network presented May 2005 at La Société des arts Technologiques in Montreal, Quebec <http://www.mdcn.ca>

2 Zero1 SJ: A Global Festival of Art on the Edge <http://01SJ.org>

3 Maywa Denki <http://www.maywadenki.com/>

a_m_m_s: is zero no.thing?

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Introduction

This paper concerns a contemporary enquiry in new 'technological practices', commencing with a mapping of how 'zero' originated. Zero, conceived in South Asia around 2,500 years ago, is a prerequisite for the Information Age and for Digital Art. Researchers in the Indus area were integrating mathematical and scientific ideas with philosophic concepts and with artistic investigation. For example in certain Indian temples you would find at their centre, their inner sanctum, not ornate, symbolic religious statues or paintings, but an empty space with a book only: and the book was a book of mathematics. The mathematical attempt to understand the universe, the philosophic attempt to grasp it, and the artistic conception of it, went hand in hand. This is highly significant and pertinent as the Information Age, and the Age of Digital Art, essentially begins with the conception of the zero, through inter-twining of mathematical, philosophical, artistic innovation.

This research is a transnational, tele-epistemological investigation of South Asian and Japanese notions: *akasha*, *ma*, *mu*, *sunyata*, (*a_m_m_s*) and their inter-relating pertinence in a contemporary art context, beyond immediate cultural and religious specificity.

a_m_m_s engages with media art themes. Re-interrogation of ontological concepts and processes provoke questions about interfaces between 'virtual' and 'real'. Cultural inputs, and the notion of the 'trans-local' are central questions in its processes, as is the nature of its ultimate realization: highlighting the significance of location.

Unthinking and rethinking technology

Through exhibition and intervention processes, one is exploring the way one may think about art and technology and 'technological practice' today. 'Technological practice' is being used in a particular and crucial sense: referring to what might be thought of as an integrated epistemological process where art, philosophy, craft/technique, and science are considered part of an integrated thinking-practice.

While there are parallels with Heidegger's discussion of *techne*[1], this enquiry's roots are in Buddhist and Tantric philosophy, as well as in the re-conceiving of South Asian and Japanese philosophic and aesthetic concepts through transnational/trans-local processes. Ajaykumar discusses this in several articles[2], and Nandi talks about presence and the illusion of immersiveness.[3]

The enquiry considers a broader history of technology, considering 'technological practice' as ontological practice. It scrutinises possibilities of earlier ontological and epistemological activity as paradigms for contemporary thinking-practice. While inter-disciplinarity has been considered a recent phenomenon, this particular South Asian approach was already a sophisticated enquiry 2,500 years ago, offering contemporary insights.

The meaning and significance of *Akasha, Ma, Mu, Sunyata, Enso, Kyo*

The Japanese term *ma* has multiple meanings and resonances, including 'space-time', 'emptiness': an emptiness that has presence, 'interval', and 'pause'. It is a cultural and aesthetic term that has profoundly imbued Japanese cultural and social practices. Before encountering Europeans, Japanese had no word for space that was distinct from time: space-time — a four dimensional realm. *Ma* exists in hundreds of compound forms in the Japanese language. Pertinently a term for an idiot in Japanese is *ma-nuke*. While In English an idiot is sometimes called 'empty headed', in Japanese *ma-nuke* has the sense of someone who is 'too full', who has 'no space'. The problematics of this kind of cultural, linguistic intersection are being investigated.

Ma is not a religious term yet there is overlap with Zen concept *mu*: understood as 'void', 'nothingness', 'emptiness'. Zen has had a profound influence on Japanese art for around 700 years.

Ma corresponds in part to a Sanskrit term, *akasha*: signifiying 'space': a space that has presence, 'ether', 'sound'. In Hindi, *akash* from *akasha* means sky.

Sunyata is a Buddhist concept, and Sanskrit word, which means 'void' or 'nothingness'. *Sunya* of *sunyata* means 'emptiness', important also in Brahmanism. In Sanskrit 'zero' is written as sunya. Sunya also means 'emptiness'. *Sunyata* from *sunya* is a Buddhist concept which signifies 'void' or 'nothingness' or 'emptiness': an emptiness that has presence. Sunya is important also in Brahmanism. While discussing 'emptiness', it should be noted that *su* of *sunyata* has the meaning of something that is 'swollen with possibility': like an empty womb that eventually fills with a child.

In terms of iconography and the development of the notion of zero, and with consideration of zero's shape, it is important to think of two iconic images: the *mandala* and the *enso* Zen circle. The *enso* circle refers to 'nothingness', 'void', and 'enlightenment'. The original meaning of mandala is 'healing circle': a circle and space of healing. One has here less a two dimensional image on a wall, and more *mandala* as a dynamic, architectural and transformative four dimensional space-time. The installations to be created will have the potential for being a transformative space.

Exposition on Zero — Approaching Praxis

Exposition on zero — is zero no.thing? is a practical research that attempts to synthesise the artistic, the mathematical and the philosophical. Through algorithmic process, installations are constructed that are interactive and reactive, as well as spaces of immersion and contemplation. Moreover it is an architectonic space with vital kinaesthetic processes. South Asian architecture such as Ellora rock-cut edifices were strongly influenced by Tantra. Here the voids created in the humanly constructed caves were considered a part of the totality of the sculpture, a sculpture that came into being at the moment of spectatorial inter-action[4]. Here again is the pertinence of 'inter-face' and 'inter-val' (*ma*).

In Japanese Buddhist schools, the term *kyo* signifies sound and vibration. Buddhist ideas state that all phenomena in the universe are considered sacred, and that all phenomena exist in continuous dynamic inter-relation and inter-action, and that this relationship is manifest through sound and vibration. Sound and vibration processes are important elements of the contemporary practical research processes.

An 'a-spectatorial' approach is critical. 'A-spectatorial' here means a re-envisaging of spectatorship: one that is not about 'looking at' but about inhabiting a space. This conceptual approach allows a re-exploration of the notions of stillness and presence, and the relation between body, time and space.

Conclusion

no.thing is the illusion of emptiness. Here one is trying to understand the added value of zero in knowledge. Is zero really zero? How far can one go in re-presenting zero from the symbolic modes of representation to other modes of re-presentation? Moreover there we may discover that zero is not as empty as one may think.

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Art as a Field Phenomenon

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The artwork as an affective game

We would like to start this communication reflecting on Marcel Duchamp's statement about the creation of an artwork. In a lecture given at the Convention of the American Federation of Arts he addressed the creative act shedding light into the complex relationship between artist, artwork and spectator (Duchamp, 1957). In Duchamp's analysis the execution of an artwork, all creative decisions "rest with pure intuition"(*Ibid*.) leaving small room for conscious intervention on the aesthetic plane. In other words, we might say that on the laborious process of transmuting matter into art objects, the assembling of parts, the handcrafting and skills are just the tip of an iceberg which encompasses the whole creative activity. The submerged portion largely corresponds to accessing "the labyrinth beyond time and space" to which the artwork resonates. It is in that sense that the artist might be thought as "a mediumistic being" (Ibid.) since he/she plunges into the chaos in order to visualize meaningful patterns.

But the cycle of a creative process is not complete until the dynamic structure artist/artwork/spectator is established. The artwork is like an interface which embodies the energy coming out of the artist's psychic and physical activities. We might consider it an energetic structure, an entity. According to Duchamp, the artwork is a form of catalyst of an "aesthetic osmosis" (*Ibid*.), a process that is activated between the artist and the spectator through which an "art coefficient" is transferred. As he explains:

> "(…) 'art coefficient' is like an arithmetical relation between the unexpressed but intended and the unintentionally expressed. (…) 'art coefficient' is a personal expression of art à l'état brut, that is, still in a raw state, which must be 'refined' as pure sugar from molasses by the spectator (…). The creative act takes another aspect when the spectator experiences the phenomenon of transmutation: through the change from inert matter into a work of art, an actual transub[s]tantiation has taken place, and the role of the spectator is to determine the weight of the work on the aesthetic scale." (Ibid.)

In order to unfold the aesthetic dimension of the artwork, the spectator must contemplate, participate or interact with it. He/she must engage in form of ludic game of decoding ideas, sensations and affections, a game which rules are latent in this "raw state" of art. But what does mean to be art in a "raw state"?

A systemic approach

To attempt to answer the previous question we will suggest a distinction between artwork and work of art. The former is a set of configurations, a system, the plate of a hologram; the latter is the flow of its interlinking parts. The artwork is a piece of information; evoking Gregory Bateson's words, we may say that the work of art is "an aggregate of interacting parts or components" (Bateson, 2002, p.86), a body of ideas, part of a mental system that includes the artist, the observer and is triggered by difference. The work of art, we suggest, is the realization of a whole, and its raw state may be surveyed as a field phenomenon.

In 1978 Roy Ascott proposed a "field theory for postmodernist art" (Ascott, 1980) drawing attention to the character transactional of works of art, in which a field of "psychic interplay" (*Ibid*.) between the artist and the observer takes place, and proposed the artwork as a system.

> "Art does not reside in the artwork alone, nor in activity of the artist alone, but is understood as a field of psychic probability, highly entropic, in which the viewer is actively involved, not in an act of closure in the sense of completing a discrete message of the artist (a passive process) but by interrogating and interacting with the system 'artwork' to generate meaning." (Ibid.)

A systemic methodology, "as opposed to the analytical approach, includes the totality of the elements in the system under study, as well as their interaction and interdependence"(Rosnay, 1979). In such a framework, the art object far from being surveyed as a final product of a meticulous labour should be understood as an element of liaison, a node. It is not instantiated to convey unidirectional information from the artist to the spectator, as Roy Ascott has attested. Also, it is not merely a sub-product of an artistic experience but an event in the world to be experienced. Based on such a systemic approach I would like to propose two epistemological movements. The first is to take into account a theoretical perspective of the artwork as a man-made organism. The second is to consider the understanding of organisms as a whole coherent system.

Organisms as coherent systems

In her book "The Rainbow and The Worm" Mae-Wan Ho provides us a useful analogy to understand what coherence means.

> "An intuitive way to think about it [coherence] is in terms of a symphony orchestra or a grand ballet. Or better yet, a jazz band where every individual is doing his or her own thing, but is yet in tune or in step with the whole." (Ho, 1993, p.151)

Since 1974, systematic research carried out by Fritz Albert Popp[1] and his colleagues in many parts of the world has been focused on conducting experiments and working towards a biophotonic theory in which coherence plays a fundamental role to the understanding of organic systems. One of the main hypotheses is that biophoton, a term adopted in reference to photon emission by biological systems, plays an important biological function and due to evidence of coherence of its light, i.e., a high degree of order with an extremely stable intensity (Bischof, 2005), biophoton is supposed to operate as a biological laser, able to manage a network of information in the organism as well as to form electromagnetic field patterns.

The reason biophotonic research is brought into focus here is because it seems to provide an alternative model to the explanation of living systems. Different from conventional thermodynamics that is grounded on the "transformation of heat energy into mechanical work" (Ho, 1993, p.154) biophotonics, in turn, takes into consideration the "electromagnetic nature of all molecular and intermolecular forces" (*Ibid*.). As Mae-Wan Ho defines, "organisms are coherent space-time structures maintained far from thermodynamic equilibrium by energy flow" (*Ibid*., p.155).

Conclusion

The triad artist, observer and artwork has been complexified by telematic tools which brings to the artist and also to the spectator, "a broad awareness" of the work "as systems undergoing transformations in time" (Benthall, 1972, p.39). Hence, we must look for holistic models of analysis that take into account not only the artwork as a technical object and its complexity but also the invisible flow of forces that foster its apparition. These invisible forces that arise from the creative process and manifest in the experience of the viewer seems to be constituents of a dynamic coherent field, of which flow is a vital part of an organic structure made of biological and technological parts. It is in that sense we suggest a model based on a field concept is fundamental to the comprehension of art.

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1 Cf. http://www.lifescientists.de/index.htm

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"Jam to-morrow and jam yesterday — but never jam today."
The White Queen to Alice, *Through the Looking Glass*, Lewis Carroll

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Reality jamming implies prior identification of realities to be jammed, and this in turn implies recognition of the framing mechanisms which separate phenomena that otherwise constitute a single experiential flux. Because the ways we aggregate and segregate our experience into categories constantly evolve within individual and social contexts, framing devices to effectively demarcate spheres of activity for one individual or group may prove totally inoperative for another. This elusiveness of the mechanisms whereby experience is differentiated is what gives reality jamming its critical transience.

Zaum and sdvig

One historical eruption of what might be construed as reality jamming is Russian avant-garde *zaum* or "transrational" art. Malevich, Khlebnikov, Kruchenykh and Matyushin sought to wrench percepts (colour, sound, morphemes and phonemes) from entrenched usage to make them the unbridled bearers of spontaneous meanings, of a fresh and soaring perception of the world. Their cubo-futurist opera *Victory over the Sun*, produced in Saint Petersburg in December 1913, was a spectacular attempt to embody and stage the disruptive energies of this new aesthetic vision. Under resourced and barely rehearsed, its use of powerful projector beams to lacerate starkly geometrised costumes and sets, and of strident chorister declamations to shock the ears, made it a twentieth century artistic turning point which launched determinant breakthroughs by Malevich and his entourage.

Key to *zaum* creation is the concept of *sdvig* — displacement, shift, dislocation — brought about by subverting rules, scales, foreseeable logics. The dynamic reality of *zaum* aesthetics literally makes sense by contrast with existing perceptive orders. This implies a process and aesthetic strategy that is intimately wrought into a specific historical context: the orders with which *zaumnyaks* or futurists sought to break were those that characterised conventional discourse and perceptions of their time. *Sdvig* manifestations are of necessarily fleeting impact, since disruptive manipulations of foreseeable processes in turn become foreseeable over time. This dilemma of impermanence that besets art is summarised by Victor Shklovsky, proponent of the notion of artistic estrangement (*ostranenie*) or defamiliarisation: "The purpose of art is to impart the sensation of things as they are perceived and not as they are known. The technique of art is to make objects 'unfamiliar', to make forms difficult, to increase the difficulty and length of perception because the process of perception is an aesthetic end in itself and must be prolonged. Art is a way of experiencing the artfulness of an object; the object is not important."[1] My question is how and whether the concept of estrangement that underpins sdvig might be manifest in a culture where already, according to Bolter and Grusin's formula, "the remediation of reality has been built into our technologies of representation."[2]

Syncretism and the extended body: holistic framings to jar the jam

Steve Anderson's argument for technological syncretism, which opposes the bland rhetoric of convergence by foregrounding the historical and material components of digital media, is inspired by the collage and montage heritage exploited by works he richly analyses.[3] In some ways one might see as analogous to Anderson's syncretism Symbiotica's concept of the Extended Body, comprised of living and quasi-living, liminal beings whose hybrid constitution defies and challenges traditional taxonomies.[4] By reframing the latter anachronistic classifications, Symbiotica raises our awareness of the degree to which our lives have become technologically riddled. Anderson and Symbiotica propose overarching concepts which can both highlight and accommodate difference. They shift us beyond the immobilising grip of obsolete mindsets and open up fresh horizons by reframing the thrust of art, its

historicised and radically technologised actualities. To vivify recognition of the incongruity (*sdvig*) vis-à-vis the everyday world on which art draws, they scaffold systems characterised by permeability between registers of reality previously considered as discrete.

This raises a tricky issue: might not work that readily enfolds and commingles difference perhaps bear the fatal seeds of its own indifference? Do we behold it from within or without, and where are its boundaries relative to outlying zones of difference, i.e. phenomena relegated to another order? Since our engagement with creative visions that are the stuff of art hinges on how they are offset from everyday reality, the very notion of "reality jamming", of playing with the boundaries of different reality constructs, depends on how these boundaries are instantiated.[5] The jamming and jarring inherent to *sdvig* and to *ostranenie* raise the question of how one can break with a familiar experiential continuum to make art "*a science of singularity*; that is to say, a science of the relationship that links everyday pursuits to particular circumstances." (Michel de Certeau, 1984; his italics).[6]

Never jam today

Malevich et al broke new aesthetic ground through reality jamming which employed distancing mechanisms (aggressive visuals and lighting, *zaum* declamations by a chorus of aliens) to generate singularity from the seamful — as opposed to seamless — relationship instated between beholder and artefact.[7] Belgian performance group Crew's *Crash* at the Anatomical Theatre in Amsterdam in 2004 embroiled realities perceived by a volunteer inter-actor and beholders through a seamless, high-tech jam of sensations (visuals, sound, texts, time lapse projections), to create a disturbingly mastered experiential drip feed. Thus described, these works constitute extremes on the reality jamming continuum, yet they might be uncannily comparable if their respective historical and material realities were differently foregrounded. Perhaps reality jamming, the wrenching of percepts and concepts from habitual contexts to trigger new sensibilities, is as fleetingly utopian as it is culturally vital, and perhaps fleeting vitality is inherent to poetic constructs, such that art is haunted by the "never jam today" paradox offered by Carroll's looking glass, where "memory works both ways".

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5 Norman, Sally Jane. 2003.

6 De Certeau, Michel, 1984.

7 Notions of seamful ubiquity and design have invested HCI discourse in the wake of work published by MacColl, Chalmers et al as part of the UK Equator Interdisciplinary Research Collaboration (2001-07); cf. [www.equator.ac.uk/].

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Inokashira Player:
The Creation of Mashup Web Media Linked with a Public Facility in the Real World

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Introduction

Recent developments surrounding the Web are described as Web 2.0. Designed by authorized editors, the information generated online changes dynamically depending on the end-users' intention and environment. One such tool used to achieve this interaction is a *Mashup* web application — a set of several combined online APIs produced regardless of any profit or commercial value. A *Mashup* design is able to construct a single story from multiple information sources, thereby launching new services everyday that providers will be unable to predict.

Related work

Typically previous work in this area had concentrated on the link between real-world events and information using maps provided by the Google API.

There are also new kinds of art projects that allow personal opinions to be published online. The Dumpster[1] uniquely expresses stories of unrequited love by collecting these stories from blogs all over the world. The COLORS project[2] expresses the feelings of today's world through an automated search of emotion-related words in blog entries.

While there are many crossover projects designed to visualize events at the 'world' or 'community' level (so-called 'god-view'), there is an absense of initiatives 'zooming in' to a more individual position ('insect-view'), which should allow us to see things from a completely different viewpoint.

Zoo park project

This was a trial project to test how Mashup contents can link facilities to the real world. We conducted this research in the Inokashira Zoo Park — a small zoo in Tokyo operated by the Tokyo Metropolitan Government. Since the operating budget is limited, they faced the problem of promoting the presence of the facility and extending its services in the future. Therefore this project started as a research investigation to realize a medium for promoting the zoo within these restrictions.

Inokashira player: Mashup web media for public facilities

In this project we implemented the Mashup web contents to generate online information solely linked with the real "places" and "animals" of Inokashira Zoo Park. When people access this web application online, the contents are reflected by the time of access and the weather information of Inokashira Park Zoo (online weather reports are used to generate real-time weather graphics). In front of each animal are icons representing staff members, which when clicked returns an image library based on the animal. There are also icons representing the zoo visitors, which when clicked display the viewpoints and opinions of previous visitors to that specific animal in Inokashira Park Zoo (extracted from Blogs using the Google API). For example, by retrieving information from the keywords "Inokashira Park Zoo and Elephant", the application is able to visualize real-time viewpoints of visitors to this animal.

Figure 1: Inokashira Player (http://being.inokashira-zoo.jp/)

Unique linking between online information and physical places

This application's main feature is to realize information design extracted from the real space by retrieving unique keywords (in this case 'Inokashira Zoo Park') and a name for each animal. Thus the idea of linking personal blogs to unique names and physical spaces enables us to aquire a reflection of the viewpoints and opinions in society.

Figure 2: Inokashira Player Voice from the Blog

Discussion

While the Inokashira Player may not prove to be the single most effective solution to promote the zoo, the zoo staff found an interesting usage of this application. Professional staff who had previously operated the zoo in a more conventional fashion began to use the application as a tool for checking each animal and the zoo itself. By visualizing a wide spectrum of communications between visitors and animals, this tool allows staff to observe the animals' conditions in finer detail and identify any issues that animal doctors may have overlooked. Consequently, Inokashira Player mirrors the real-time zoo as information architecture.

Meanwhile, pernicious advertisements by affiliate marketers are becoming increasingly obstructive when searching Blog articles. This problem makes it more difficult to maintain the connection between unique keywords and physical spaces.

Conclusion

This research realized a media application focused on one public facility by linking several APIs to the specific place. Inokashira Player provides an 'insect-view' to explore our world by considering the linkage between personal blogs and physical places.

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1 Flong, 2006, "The Dumpster", http://www.flong.com/projects/dumpster/

2 h.o, 2005, "COLORS project", http://www.colors-expo2005.org/, 2005

Collective Film Script Writing:
Experiences in Using Mobile Creative Writing Tools

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Mobile social media

Social media plays an integral part in the convergence culture.[1] The discussion forums and media sharing sites have boosted the amateur and independent film making. The long tail[2] distribution model has even made amateur films into commercial products, e.g. Star Wreck (http://www.starwreck.com). The citizen journalism phenomenon is linking audiences with news creation.[3] An intriguing future possibility is storytelling enhanced with context sensitivity.[4]

Mobile communication is very tightly linked with social media.[4] The new mobile phone technologies can be used in advanced ways to sense complex social systems.[5] Mobile tools have been used in several interesting social media services, such as micro blogging (http://www.jaiku.com/) and location based photo sharing (http://www.locr.com).

In 2007 Nokia and Reuters explored the use of mobile phones in citizen journalism (http://reutersmojo.com). The project aimed to enhance the link between professional editors and amateur journalists. The context sensitivity enables automatic creation of metadata and annotations, but a news story needs human capability to make intelligent observations. These creative elements in the mobile writing gave the initial motivation for the "Collective Writer's Club."

Collaborative writing

Our goal was to study collaborative writing of the short film scripts. We did not limit the creativity only to texts, but allowed also the use of other media, such as pictures and audio.

Collaborative writing as a practice is not a new area as such; sophisticated early forms of the collaborative text creation can be traced e.g. in various artistic text experimentations made among Dada, and Surrealist writers at nineteenth and twentieth centuries.[7]

First, we should accept the fact that all writing is by nature collaborative. Just as journal publishing is always a colalborative process, creative writing process should also be similarly understood as a communication chain consisting of individual's responses to others' texts, intertextual tactics, competing utterances, etc...

Mobile collaborative writing experiences

In our study, over 10 enthusiastic amateur film makers apent 12 months writing 1-3 short film scripts. We use d online collaborative writing tools, mobile technologies and face to face discussions. The group knew each other through workplace, but they had not done artistic work together previously. The multi-discipline group consisted of engineers, UI specialists, graphic artists and media scientists. Each of the group members had some previous experience on short film making. We started to work on simple web form, where initial ideas for the script were collected based on simple provocative assignments. Over 100 responses were collected at first phase. The responses were synthesised within the group by using FreeMind and building the affinity wall of the possible script elements. The more important themes/premises were selected by voting for further development.

Next the writers needed to write either characters or scenes. They could also add images, and recorded audio. The hypertext based writing process and the written script elements introduced in our web forum were linked together via free-word tagging. The tool could be used both with PCs anb mobile phones.

The actual script development, however, did not happen online but in informal ad-hoc discussions. Over time, creating new ideas and script elements became easier within the group, while notating and linking the items together grew more difficult.

For our purposes, Bakhtin's conceptual work on areas of communication chain and speech genres provides solid background on how to understand and structure collaborative work flow taking place in collective film script writing process.[9]

TASK	PARTICIPANTS			TOOL
	Story 1	Story 2	Story 3	
Assigment 1 Theme /hypothesis	All	All	All	Web Form
Assignment 2 Character/motive	Writer 4	Writer 1	Writer 2	Web Forum
Synopsis	All	All	All	Coffee Room
Assignment 3 Dialog	Writer 3	Writer 4	Writer 1	Email
Assignment 4 Scenes	Writer 2	Writer 3	Writer 4	Mobile
Treatment	All	All	All	Coffee Room

Time

Figure 1: Collective Writers' Club contribution process (10 authors, 4 writers/6 commentators).

Every text phase (synopsis/ treatment) is a product of the various writers' output, script's "collective speech genre" is developing over the assignments, writers are responding into group assignments by choosing the text she wants to develop further. Each and every script element has ownership during the different phases of the writing; texts are further developed and discussed mostly offline, at face to face discussions. During the different phases of the writing, the group is voting between the texts (figure 1).

Future work

In the first version of our tools the semantic information (keywords, tags) comes from the users. Enhancing the system with artificial intelligence and context sensitivity could provide automatic annotation[10] and associative suggestions to support the creative process.[11] However, automatic sensing does not apply to all cases, e.g. sensory evaluation of food quality bases on using human senses. Thus, one possible use case for the current tool could be community based ecosystem monitoring.[12] For example, how a river's closed ecosystem sensory evaluation (smell, sight) is linked to a large geographic area.

A bigger unsolved question is how the current creative writing process, collective approach and new tools will fit together? In our research we had mainly amateur writers and we have just started to involve professional writers into the process.

Speech genres should be studied in real life situations, the categorization started by Bakhtin should be developed further, and the results need to be carefully analyzed. After the first experimental parts of speech system is developed based on initial artistic speech genres, the system should be evaluated by professional writers in order to develop meaningful data of how the system works, and how it could fruit creative work flow, and not limit it. Optimum system should also have scriptable program language, and it should support multiple modalities, copyright schemas in order to make collective writing process economically reasonable, effective and pleasant to use.

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From the Image of a Person to Its Electronic Incarnation

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The name was first. Later, the man adopted name.

The first names are given by Parents, next ones are sometimes attributed by the community; the Web name is adopted through independent individual decision, taken in solitude, in the glow of computer screen, consciously; it is related to the onset of existence in electronic reality. The adoption of Web Name, frequently resulting of personal choice, may become the start of Web activity, e.g. the implementation of various operations into the electronic reality, i.e. the electronic *realis*,[1] which is the term applied in this study. It is treated as an alternative sphere of being in relation to reality. Genuine human involvement can be found in it. It is related both to the utility aspect, i.e. the business/professional use, and the existential: emotional and spiritual involvement. The Web Name may become the source of meanings and messages representing the human being. These meanings may emerge and develop in proportion to increasing involvement in electronic *realis*. In effect, the Web Name accumulates significance and recognition, forging closer relation to the owner, thus becoming increasingly true and genuine.[2]

It is our intention to understand the process leading to identification of man and his/her activity, at least partial identification, with electronic *realis*, electronic sphere of existence. We refer essentially to 3-D environments or Multi-Users Dungeon. This process we interpret as a process of man's electronic incarnation (named also as a process of presenting), immersion and emergence in the electronic world. It is related to the process leading to development of electronic personality, i.e. the personality in reality of electronic *realis*. The process of electronic incarnation is accompanied by participation, activity, contribution of time, attention and involvement in the environment of electronic *realis*. We focus here on the process of electronic incarnation, as intentional in-penetration of human into the reality of electronic *realis*. The process of electronic incarnation is the discovery of place in electronic *realis*, the presence with possibly high level of involvement, resulting of profound immersion and initiation of new existence. The electronic incarnation is related to the emergence of spiritual values, the existence of which is embedded in the reality of electronic *realis*. Man finds the world in the reality of electronic *realis* by in-penetration, shaping it and providing with humanistic dimension.[3] Auto-creation reveals values and mechanisms, and relates to personality enrichment and the value of co-existence in electronic community.[4] Electronic incarnation is treated here as source of emerging values related to true experience.[5]

The process of electronic incarnation results from the total orientation of man towards electronic environment. Electronic incarnation may assume chronic, continuous character and intensify in time. The identification of activity in electronic *realis* leads to disintegration of the original perception of image, which is replaced by true existence in electronic *realis*. The notion of image loses significance and is replaced by interactive environment, the electronic world of man.

Electronic incarnation is a process experienced by over a million of users, entering electronic *realis* independently and for diverse reasons.[6] The assumption of anonymity in relation to world reality keeps both realities discrete and support their mutually hermetic character. This situation stimulates the permanent incarnation into the electronic version of one's *self*, which consists in auto-creation and self-transformation. The question: *Who are you?* in electronic *realis* may elicit the response which contains meanings that might never be manifest in reality. The core of the process is electronic auto-identification, the gradual emergence in capacity of the citizen of electronic *realis*, conscious of one's existence in this capacity and aware of new possibilities related to this fact. Electronic incarnation involves the transformation of everything – essentially the entire real world – into immaterial form, and continuous implementation of human needs into electronic world.[7] In this meaning, the incarnation process releases axiologically charged relations and involvement relying on true intentions. In effect, man reaches human meanings which in reality would often have but superficial significance as "labels" attached to

reality fragments. In a part, electronic personality lives its own life, and, in another part, it remains symbiotically attached with the man "unsticks" from reality. The avatar has assimilated man and adopted his/her nature. Man has changed the sphere of his/her existence, changed his/her world.[8]

The electronic form "drags-in" the personality. But a "biological avatar" remains in reality. In a way, humanist values are increasingly embedded in non-biological substratum. In the process of migration to electronic *realis*, humans import these values with them. Consequently, the axiological dimension of electronic *realis* is constantly changed and increased. Since man is usually related to reality, in situation when alternative reality is encountered (which to some degree competes with the former one), he/she either balance between two realities, or, sometimes, makes the choice, and is born anew assuming a Web Name. The new person rises and starts existence in the reality of electronic *realis*.

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1 Similar notions, having genetic significance for the concept of electronic realis, can be found in Myron Krueger's "artificial reality" (1991, Artificial Reality II, Reading, Massachusetts: Addison-Wesley Publishing Company Inc.) and Michael Heim's "virtual realism" (1998, Virtual Realism, New York: Oxford University,). These notions describe electronic reality in categories of technology ("virtual realism") or artificiality ("artificial reality"). In present study, electronic realis is understood as a type of human reality.

2 An example is provided by the Second Life electronic world. The wide interest in SL may have been based partially on behaviour patterns belonging to the sphere of reality, and partially caused by the possibilities provided by SL. In consequence, the needs of reality and possibilities provided by electronic reality are intertwined. (www.secondlife.com).

3 Popper, Frank. 2007. *From Technological to Virtual Art.* Massachusetts Institute of Technology, p. 355.

4 Cartwright, Glenn, F. 1994. "Virtual or Real? The Mind in Cyberspace." In *The Futurist* Mar/Apr, 28 (2).

5 Heim, Michael. 1993. Metaphysics of Virtual Reality. New York: Oxford University, p. 114.

6 Kluszczynski, Ryszard W. 2007. "From Film to Interactive Art: Transformations in Media Arts." In *MediaArtHistories*, O. Grau (ed.). Cambridge, Massachusetts: MIT Press, pp. 216-221 and 224.

7 Ascott, Roy. 2003. T*elematic Embrace. Visionary Theories of Art, Technology, and Consciousness.* University of California, p. 264.

8 An example of the electronic incarnation process could be provided by Eduardo Kac's artistic work Rara Avis. Installation provides a medium for balancing between the real world and electronic environment. Due to the application of HMD technology, participant has the possibility of functioning both from "outside" and "inside" of a bird-cage. The use of HMD appliance has changed the participant's perspective. It enabled the participant's exists among the birds, inside the cage. It is not just the simple case of changing participant's spatial position from "outside the cage" to "inside the cage". The objective is to create in a different place. In reality any such attempt of integration with the environment of birds would have been practically impossible. Due to technology, which in this case means the broader context of electronic realis, man has acquired the possibility of accommodation in various new situations, which may lead to understanding of new meanings and co-existence. Rara Avis is plugged to the Web, which provides additional collective perspective: individual seeing is spatially generalized and multiplied, enabling mass perception, community of experience and an insight that is individual among multitude. The exercise becomes a common source of mass cognition and experience (Kac, Eduardo. 2005. *Telepresence & Bio Art. Networking Humans, Rabbits, & Robots.* University of Michigan, pp. 162-166).

Inaccurate Coordinates

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How do we locate ourselves? How do we position ourselves in relation to our surroundings?

Location is not a set of coordinates; it is not something static and easily measurable, it is not a case of physical geography but is a state which exists through the complex interplay of history, culture, socio-politics, economics and technologies. Location is a multifaceted context, a situation and state of being and is not necessarily linked to the ground beneath our feet. The expansion and intermix of these various elements means they may no longer be defined by location. A shift from one location to the next seems impossible to define when locations constantly merge with each other, a positioning within multiple contexts and multiple spaces. History, culture etc. are not constructed in one defined place, and our locations are innumerable, dispersed points of reference.

Our notion of our location has never been stable, even in terms of simple geography. Our grasp of place and our means of delineating place have greatly change over the centuries. As David Harvey comments, in the time of European Feudalism 'place assumed a definite legal, political and social meaning. External space was weakly grasped and generally conceptualized as a mysterious cosmology populated by some external authority, heavenly hosts, or more sinister figures of myth and imagination.' This then began to change in the time of the Renaissance as new objectivity and functionality began to enter map making techniques leading to the standard of map we have today — 'maps striped of all elements of fantasy and religious belief, as well as any sign of the experiences involved in their production had become abstract and strictly functional systems for the factual ordering of phenomena in space.' New technologies have the ability to create highly accurate representations of our physical surroundings but they also present us with the opportunity to express location outside of standardised forms and reinstill subjective articulations of space.

With this in mind how may one go about exploring locating media and locative media? The issue of technology's role in the construction of space and our interaction with space is highly prominent in this discourse. This construction and interaction is perhaps what we can define as locating media. Certainly new technologies are offering new locations, widening our notions of place, with virtual, personalized, augmented space, etc. However they may also simultaneously narrow our sense of location — site specification is removed when the information can be obtained and communication sustained no matter where we are. And as we can connect to 'everywhere', our sensitivity to location specifics may diminish. If we are interacting with other spaces does this mean we are also inactive in our own location? If we talk on a mobile phone, if we chat online, listen to our personal audio devices, do we separate ourselves from where we are? Even if one is mobile in these interactions it does not import 'locatedness' in the particular context of one's surroundings. However it is misleading to conclude that technology destroys space — locality is in a constant state of flux and does not exist separately. But there is a push and pull between senses of location and de-location.

Much of the debate which has surrounded older forms of media such as photography, film and television is applicable to emerging technologies of today in the disturbance of the line between fact and fiction and the impossibility to communicate a direct reality. A medium will always narrow and distort the original experience and therefore when attempting to express a context, a location through media technology, we must be aware of the gaps and transformations which they eschew.

Mediums frame the information they carry — when another context, another location is engaged with through technology only an enframed perspective is offered up — the danger is to assume this is the full perspective. When assessing the use of any medium through which we engage and communicate, theories of linguistics are naturally relevant. What is conveyed through the medium is changed by the medium itself. In the examination of Saussure's signifier and signified we cannot accept the signifier as the entire embodiment of

the signified, as there is of course a loss in translation, a compression in data conversion. But there is also the potential for an extension of meaning through this process, with inaccuracies also leading to new readings, new perspectives. The inaccuracy of communication does not require that we should stop communicating. However when this difference of signifier and signified are overlooked then misconceptions easily occur, as in Baudrillard's Simulacrum, hyperreality replacing reality. Heidegger in particular warned of this misconception, cautioning that the enframing which technology presents us with should not be mistaken as the whole picture. Heidegger poignantly remarks "despite all conquest of distances the nearness of things remain absent." Technology, new media, in some ways puts a barrier to the true experience of things, the revealing of essence. But he also points to the new perspectives which technology offers us, acting as a magnifying glass, when we frame something we examine it closely, and may become more aware of our relation to it.

In examining questions of location two central problems emerge — how do we interact with location and how do we communicate location. These are central to the meaning of 'locative'. If location is viewed as our surrounding environment — what is our dialogue with that environment — and by dialogue it is meant mutual relationship — of give and take. How do we participate in that environment and how does technology facilitate this?

Our locations are increasingly constructed by new technology, new media, and becoming part of the reality of our located experience. It is neither a separate apparatus, nor merely a portal to elsewhere but part of our encounter of space. While these media merge as part of our surroundings other technologies are specifically designed for the examination of these surroundings. Mainstream engagement with locative media is most probably limited to car navigation, mobile mapping and our passive encounter with surveillance/control technology. Arguably there is little interaction here, in which one is provided with a set of inaccurate coordinates which propagate a quantative notion of location. How therefore may we interact with our location and express our location?

In any interaction we bring our location with us. Our state of existence cannot be conceived in isolation from that which surrounds us, they define each other. We are therefore constantly engaged in a communication of location in some form. We cannot leave place behind. This therefore also counters the claim that technology can overcome location. Technology is still inextricably linked to location, it is part of location and also constructs location. Location cannot be escaped but nor is it a single point which we are confined within. In the task of locating something, we are not to find the position in one place, rather in a network whose branches reach in all directions. But when engaging with new media which so easily connects us to elsewhere, through a largely standardised platform, it is perhaps quite easy for one to forget that this entangled network is at play. Internet tourism is a key testimony to this. Lisa Nakamura refers to internet users as tourists, able to selectively 'visit' a location, pick and choose their sightseeing spots but having little insight into the deeper identity, community, culture, experience and context of that location. When we encounter a place through a standard platform, without being physically present in that particular location, the reception of information and images easily implement false impressions. Through a standard platform there may also lead to misconceived standard of thinking — ease at which to assume others are in the same context as you are.

There has been criticism of new media technologies implementing a distancing from our own locations, preventing participation in our local community, isolating us from our surroundings, leading us to ignore our own environment when one is able to access new environments in new spaces. Virilio warns against the loss of geography, arguing that as 'Space is being continuously devalued' in an age defined by speed the departure and the destination are now one in the same. 'With the instantaneous communications media, arrival supplants departure: without necessarily leaving, everything "arrives". The sedentary voyeur is in a constant state of mediated reception leading to the 'Growing imbalance between direct and indirect information'.

In investigating our surroundings does technology present a help or a hindrance? Does it contain the potential to reveal new awareness of our environment? If we want to investigate where we are does new media offer a useful and relevant tool? Instead of interacting with elsewhere, does new media offer an improved interaction with our location? Obviously the answer to these questions relies little upon the technology itself, but more upon our approach to it and our own motivations to explore locality. There is the potential to encounter location in a new and meaningful way, there is the potential to express location with sophistication and sensitivity, if we have the impetus to do so.

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Liminal Acts:
Using Mobile Technology as a Critical Medium

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We live in a mobile hybrid space. This short sentence indicates one of the most important features of our post-modern times, which is, according to Bauman, liquidity,[1] as both society and culture we live in are in a state of constant and growing metamorphose — they change faster and faster with every ring of a cell phone, with every data transfer, with every switch on of a laptop. It also informs us of inevitable changes of perception, as the world we live in is a space where borders between real and virtual are being constantly blurred and our experience is mediated or even simulated. As Hansen notices, fluidity between body and computer and body and space, which he perceives as two extremes of our experience in hybrid space, makes us more responsible for generating our personal space. When we create it by moving freely between material and virtual, we actually "wear" it, hence his term "wearable space."[2] Mixed, augmented, virtualized, hybridized reality — these phrases are coined to describe the fact that the world, being accompanied by the sphere of electromagnetic waves and digitalized information, demands new forms of behaviour and consciousness.

New electronic and digital technologies play a crucial role in these processes as new forms of reality and experience develop in close connection to principles inscribed into them — mobility, interactivity, and immersion being the most obvious. However, as we walk the streets of our computerized cities and cross borders of materiality with every use of cell phone or laptop we rarely notice that being connected to the net is at the same time being caught in it.[3] Wearable, mobile technologies liberate us from the constraints of space but they make our mobility seen, tracked, measured and controlled as well. While accepting this double-sidedness of mobile technologies is the inevitable condition of using them, still this ideological and ethical rather than material cost is difficult to see and very often goes unnoticed. Critical attitude towards technology can help to comprehend various, often contradictory and paradoxical, effects and implications of easy and obvious things of everyday life. In this respect, artists who use technology as a tool for creative practice and at the same time develop so called "direct theory,"[4] can be seen as media and culture theorists who try to disclose or make visible the hidden dimension of hybrid reality, and propose critical reading of its influence on both public and private spheres.

Although aiming at the same goal, artistic "direct theory" is founded on principles that differ much from academic ones. Estrangement, provocation, shock, subversion, *detournement* — all these strategies are used by artists to "make easy things difficult", to say after Foucault. Being rather sceptical than optimistic, refusing idea of transparent technology, searching for uneasy, not visible at first sight or hidden effects of technology on social, political and cultural reality, artists try to resist (as Foster puts it)[5] technological hype and defend against unreflective techno-optimism. Doing so, many of them decide to create new electronic devices, or misuse existing popular products to challenge "the conformity of everyday life by short-circuiting our emotions and states of mind"[6]. The idea of *noire* design works in close relation to David Rokeby's understanding of artistic practice as designing, or construction of experience. Technology, thought of as a cultural interface, generates and demands certain mode of use, specific points of view and states of mind, and, last but not least, behaviours; it determines our experience of the world to a certain degree. To comment on this effect artists subvert usual experience of techno-mediated reality, their works take form of activist provocation that destabilizes and deconstructs notion of technology as transparent and neutral.

Taking the paradox of mobile and wearable technology mentioned above as point of departure, we can, on one hand, find number of works that make zones of panoptic control visible by hacking wireless surveillance systems and questioning strategies of dataveillance (David Rokeby, Michelle Terrain, Rafael Lozano-Hemmer), or, on the other, find works that focus on critical interpretation of use of mobile phones, GPS systems, and other commonly used electronic devices as technologies in which "freedom and control are one" (Laura Beloff, Steve Mann, project Ashaver220). Balancing on a threshold between liberating and constraining aspects of today's high technology artists' design of "liminal acts", they construct experience which is unusual, strange, sometimes even threatening rather than easy to comprehend, obvious, or normal.

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1. see: Bauman, Zygmunt. 2000. *Liquid Modernity*. Cambridge: Polity Press.
2. Hansen, Mark B. 2002. "Wearable Space." In *Configurations Volume* 10 (2). Spring, Stanford: Stanford University Press, pp. 321-322.
3. Levinson stresses this point commenting that mobile phone is at the same time called cellphone and cell is also a prison cell. This paradox and duality cannot and should not be missed while interpreting cultural impact of technology.

See: Levinson, Paul. 2004. *Cellphone: The Story of the World's Most Mobile Medium and How It Has Transformed Everything!* Palgrave Macmillan.

4. Edward T. Small proposes this notion in reference to practice of avant-garde filmmaker and video artists to stress their interest in conditions of medium they use. To use a certain technology, in this view, means asking questions about "the massage of the medium" in various respects: cultural, social, political.

see: Small, Edward T. 1995. *Direct theory. Experimental Film/Video as Major Genre*. Southern Illinois University Press.

5. see: Foster, Hal. 1996. *Return of the Real. The Avant Garde at the end of the Century*. London: The MIT Press.
6. Dunne, Anthony, Raby, Fiona. 2001. *Design Noir: The Secret Life of Electronic Objects.* Basel: Birkhäuser, p. 10.

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The Critical Ambivalence of Play in Media Art

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Like interactivity, the related concept of play is an overused and ill-defined term in discussions of media art. Play is associated with the imagination and spontaneity, with pleasure and fun. Play can manifest in a dizzying variety of forms, from the intellectual to the physical. It is clearly crucial to experiencing art. And yet play does not feature in the index of books on aesthetic theory or contemporary art, and surprisingly rarely in discussions around media art (with the obvious exception of game art, which is not my primary concern here).[1] This paper, which forms part of a larger project that seeks to explore the impact of technological media on art criticism, considers the ambivalence of play within the critical vocabulary of media art. Taking art criticism as part of a project involved in a political ecology of the senses, I am especially interested in Walter Benjamin's contention that the 'withering' of aura in the art of the technical age is accompanied by an increase of play elements in art.

Visual documentation of media art installations are peppered with pictures of happy children. A child interacting with an artwork tends to signify its success. This might be seen as a defensive strategy on the part of the media art community, given that such documentation is often prepared for various funding agencies who are known to desire accessibility. This is undoubtedly the case in the major, audience-focused biennial exhibitions held by Melbourne-based organisation Experimenta Media Arts, such as *Vanishing Point* (2005) and *Experimenta Playground* (2007). These exhibitions have included a wide range of 'playful' Australian and international media art with relatively little concern for political content or critical reflection on the technology utilised[2]. Hence, for some observers, media art is akin to commercial culture — it infantilises, lacks critical capacity and eventually banishes seriousness itself. A report on the 2006 ISEA likewise proposed that "The festival's imagination… seemed to be characterized by a spirit of play which feels increasingly oriented towards middle-class consumer spectacle and the experience economy."[3] As Geert Lovink notes, interface tinkering is partly responsible for this association with entertainment spectacle, since it gives artworks "a playful, naïve feel" that "invite the user to experience alternative interfaces."[4]

To the extent that media art aspires to be taken seriously by the broader contemporary art world, the links between media art, children and mass culture are fatal. But there is a certain irony in the contemporary art world's dismissal of interactive media art as infantile. In contemporary art more broadly we see an increasingly fine line between what Sean Cubitt dismissively terms 'high-concept pointlessness' and the 'fun park'.[5] Carsten Höller's extraordinary slide installation at the Tate Modern in 2006 was emblematic of this trend. On the one hand, museums now consider children as part of its key audiences, creating extensive kids' programs and activities around contemporary art. Even more importantly, contemporary art itself displays a huge debt to notions of children's play, games and adolescent pastimes. True, some artists like Paul McCarthy and Mike Kelley take this into the psychoanalytic realm of the abject and traumatic. However, contemporary art in general is highly *playful* — which is often confused with a lack of serious purpose. Cubitt is rightly critical of what he sees as a sublime endgame of post-Duchampian self-referential permutations within contemporary art:

> Art has become a discipline. To play even the wildest jesterly card in the game, it is absolutely necessary to know the entire book of rules. This discipline then becomes a mode of play, but a play no longer legible as the innocent expression of freedom, but rather the controlled and configured creativity of a corporate system which needs play in order to produce innovations, yet which fears creativity as revolutionary. Play is now an alibi for enduring the present, rather than an inkling of a postponed future.[6]

To be sure, contemporary art revels in the one-line in-joke. However, Cubitt risks missing the Romantic impulse and 'ludic formalism' behind such apparently cynical play, as well as the nuances within emerging forms of spectatorial complicity.[7] Meanwhile, and

paradoxically, even as play and the comic are interrelated in their opposition to seriousness, the technologically mediated aesthetics of play associated with media art are often humourless in their formality and eagerness to be taken seriously. Could it be that, despite appearances and claims to the contrary, it is in play — and an expanded exploration of embodied pleasures — that media art and contemporary art might be in shared territory?

According to its classic theorists, play is a realm of freedom. Freud's view is that play is normally restricted to childhood and, in the course of development, is replaced by *fantasy*, transformed into creative activity, or subordinated to the reality principle. In *Homo Ludens: A Study of the Play Element in Culture* (1938), Johan Huizinga argues that games are a cultural universal, yet innately artificial, separate in some way from 'ordinary life' and intrinsically *voluntary.*[8] In his *Les Jeux et Les Hommes* (1958), usually translated as *Man, Play and Games*, Roger Caillois built upon Huizinga's prior work and suggested that play is "an occasion of pure waste: waste of time, energy, ingenuity, skill, and often of money."[9] Caillois offers a typology of games that has been influential for recent game theorists, but continues to define play as a free activity separated from everyday life. Less problematic is his point that play is uncertain, since within the set of rules the outcome may not be foreseen, and that hobbies, in particular, are a compensation for the drudgery of the modern worker.

In 'The Work of Art in the Age of Its Technological Reproducibility' (1936), Benjamin argues that with the decay of aura (which is another name for beautiful semblance, *schöner Schein*) the work of art integrates into itself an element of play (*spiel*). Benjamin's complex argument proposes that semblance and play have a common denominator in *mimesis*, which is related to his investment in the indexical media of photography and film, which in turn raises the question of *methexis*, participation. Miriam Hansen has persuasively argued that *spiel* "provides Benjamin with a term, and concept, that allows him to imagine an alternative mode of aesthetics on a par with modern, collective experience."[10] Importantly, she shows how Benjamin attributes to repetition in play a function that modifies Freud's pessimistic slant to some extent by imputing to repetition in play an existential quest for happiness. This was famously rejected by Adorno, who responded that "Art that seeks to redeem itself from semblance through play becomes sport."[11] And as Hansen also notes, "The imbrication of play with technology, along with the large-scale industrialization of leisure and amusement (in the West) since the mid-nineteenth century, complicates any clear-cut opposition of play and work or, rather, play and (alienated) labor."[12]

I want to conclude this brief paper not by attempting to squeeze the *play impulse* into a Romantic celebration of the freedom of the imagination, nor with the pessimism of Adorno, for whom "art qua play abdicates its responsibility to engage with an antagonistic, heteronomous reality."[13] Nor do I intend to redeem *repetition*, which Hansen calls the mark of ludic forms in art, as difference. Instead I want to turn to a diverse area of contemporary art practice that lies between media art and post-Duchampian irony, and borrows from a French tradition of Marxist theorization of everyday life – from Henri Lefebvre to the Situationists to Michel de Certeau and Felix Guattari — to celebrate alternative forms and ethics of life. This has come to be known today by what Nicolas Bourriaud calls 'relational aesthetics', and it privileges not only a strand of contemporary art in which the sphere of human relations constitutes the site of the artwork's meaning but also the practical arts

— the arts of preparing, cultivating and modeling — rather than aesthetic technique.[14] Curiously, however, these often collective practices, while including media like video and cinema, have excluded mediated interactivity from their view. This is a fundamentally nostalgic position, since technological media and life can no longer be separated. Only by including media art can a dialectical relation between a reconfigured subject and a technologically constituted new collectivity be explored. For its part, media art must address the reasons for its continued isolation from contemporary art discourse. To bring us back to the potential role of play in negotiating this territory, if the art situation is to became an adult playground and enable us to behave as active participants, these temporary roles must be linked back to the far more constrained possibilities of daily social life. This is already happening in some of the most successful media art works such as those of Blast Theory and Rafael Lozano-Hemmer, which move beyond mobile entertainment to draw attention to the antagonistic, performative, interdependent and embodied basis of our social relations.

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1 Darley, Andew. 2000. *Visual Digital Culture: Surface Play and Spectacle in New Media Genres*. London: Routledge is a key exception. Darley interprets the aesthetics of play – ephemeral, sensuous, physical distractions and repetitive forms – as displacing an aesthetics of representational meaning, but is skeptical of 'playful resistance'.

2 With an organisational mission of presenting the space 'where creativity and technology meet', Experimenta have, in recent years, essentially focused on mediated theatricality in visual art (fittingly, their major exhibitions begin their tour in a darkened performing arts centre).

3 kanarinka/Catherine D'Ignazi quoted in Lovink, Geert. 2008. *Zero Comments: Blogging and Critical Internet Culture*. New York: Routledge, p. 45.

4 Lovink. *Zero Comments*, p. 44

5 Cubitt, Sean. 2007. "Unlock the Gates: New and Unprecedented Tools for More People." In *Artlink* 27 (3).

6 Cubitt, Sean. 2000. "The Ephemeral Future: Art, Amateurs and Corporations in the 21st Century." In *Futures* 32, pp. 57–58.

7 Drucker, Johanna. 2005. *Sweet Dreams: Contemporary Art and Complicity*. London: University of Chicago Press, p. 42.

8 Huizinga, Johannes. 1955. *Homo Ludens: A Study of the Play Element in Culture.* Boston: Beacon Press.

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13 Hansen. "Room-for-Play," p. 33.

14 Bourriaud, Nicolas. 2002. *Relational Aesthetics*. trans. Simon Pleasance and Fronza Woods. Dijon: Les Presses du Réel, Bourriaud's exemplary artist, Rirkrit Tirvavanija, is known for preparing Thai noodles at openings.

Entanglement

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Introduction

Entanglement draws a symbolic acoustic line between two distant locations. A hyper-directional sound beam linearizes the acoustics of the two galleries creating the illusion of a single, infinite line of sound into which both sites get trapped. This fragile acoustic construction can be physically disturbed by the participants at each location. Using their body, participants can interfere with the acoustic waveguide, spilling over particles of the linear sound field into the room as they block their transit to the other site. The piece not only provokes the "entanglement" of the participants with their own sonic perception locally but also remotely, as the acoustic shadow of their bodies gets cast onto the other space. In this way, *Entanglement* explores the concept of "tele-absense" (rather than tele-presence), using a virtual acoustic channel to telematically project the disembodied presence of participants interacting with the acoustic waveguide.

Figure 1: Visitor breaking the sound beam, as particles of sound reflecting off the torso spill over into the space.

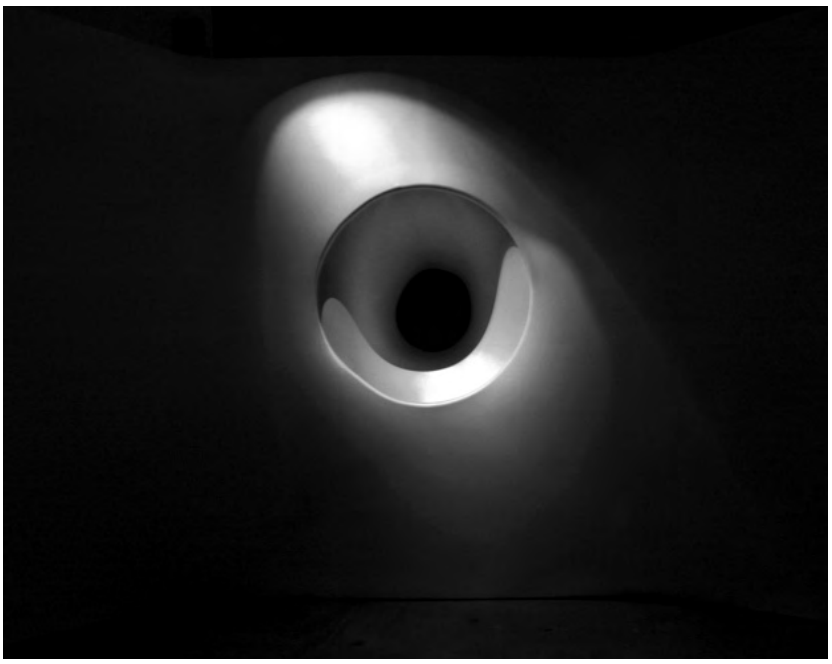

Figure 2: Detail of *Entanglement* installation at 911 Media Arts Center, Seattle, showing directional sound system inside a tunnel in a fabric wall.

Questions

Entanglement was commissioned by 911 Media Arts Center and SOIL Gallery in Seattle for their 2008 "Simultaneity" show. The premise of the show was to have pieces happening simultaneously at both venues, located at opposite sides of Seattle's downtown area. We started to conceive *Entanglement* by asking ourselves the following questions:

- How can a symbolic acoustic line be drawn between two distant locations?
- Could we linearize the acoustics of the two places and create the illusion of a single, infinite line of sound trapped between the sites?
- Supposing such a fragile acoustic construction could be realized, could it be physically disturbed by visitors at each location? In what way?
- How could this disturbance provoke the "entanglement" of visitors with their own sonic perception not only locally but also remotely with visitors at the other location?
- Finally, how could we create a sonic experience that is physical, in which our body takes as a central role as our ears?

A set of concepts emerged as answers to these questions, which served as driving forces for the design of the piece. Each of these concepts is presented in the following paragraphs.

Environment

One of the goals of the piece was to create a continuous "place", a linear environment across the city. For this purpose, we had to first transform the "void" space of the art gallery: the aseptic "white cube". Furthermore, we had to deal with its inexistent sonic environment, transforming it into an identifiable soundscape. Therefore, creating a continuous visual and sonic environment that would span across the two sites, was one of our main tasks for the piece. We considered the two sites as two faces of the same environment, conforming a singular "place" that could be inhabited at both sites. Rather than attempting to differentiate the two sites, our attempt was to create a uniform visual and sonic environment out of two complementary spaces and sounds. More explicitly: our goal was to create a subtle double ambiguity between the sonic and visual components of the sites, rather than representing a pedagogical A/B setting.

Stream

The natural metaphor of a stream could be used to describe the acoustic environment of the installation. A sound stream transects the two galleries diagonally. Locally, the particles of the stream travel from one corner of the room to the other, where they get captured

and sent over to the other site. This conforms the stasis of the sound environment.

Perturbation

People visiting the environment alter its stasis only if they enter into the sound stream crossing the room. When the stream is perturbed, the sonic flux is partially or totally interrupted, and its particles spread around the space (not unlike what happens when we interfere a narrow but powerful stream of water. See Fig. 1). A local perturbation of the stream produces one remotely, changing the acoustic conditions of the other site. Remotely, the local flux interruption is perceived as an "acoustic shadow": a ghostlike acousmatic presence.

Tele-absence

By exploring the acoustic space of one site, people transform the acoustic environment of the piece both locally and remotely. They get channeled away through sound. The piece explores the concept of "tele-absense"(rather than tele-presence), using a virtual acoustic channel to telematically project the disembodied presence of participants between the two sites.

Multi-layered complexity

Entanglement is a complex multi-layered environment. Upon entering either site, people see two dimly lit shapes in near-total darkness, one at each corner of the gallery, corresponding to the beginning and terminus of the sound beam. Participants need to adapt to its darkness, and thus have to rely mostly on their ears to make their initial explorations of the space. As the visual environment reveals itself dynamically, several aspects of the sonic environment also do so, depending on how much participants block the sound stream and for how long.

There is an exchange of sound happening locally: particles forming the sonic stream out of the sound canal (see Figure 2) spread around the place with body blockage, as the ones coming from the other gallery (first floating inorganically around the room) get attracted into the canal, opening a focused acoustic window into the other site. Remotely, these interactions are reflected as sonic interruptions of the sound stream which also transform its texture. Only if the sound stream is broken simultaneously at both sites a new layer of the installation reveals itself, which emphasizes the acoustic time delay between the two locations (approximately 7 seconds for 2.5 linear miles).

Final comments

Entanglement presents an enigmatic, composite, autonomous environment which never reveals itself completely. The piece attempts to challenge the concept of "tele-presence" by introducing the one of "tele-absence". It creates a channel of communication between the two sites that requires the use of our body and ears, not our voice. Finally, there is a subtle dialectical relation between the extremely physical local experience of sound and the remote disembodied tele-absence of the participants. While locally their body gets trapped among the particles of the sound stream, remotely only the acoustic contour of their body — built out of the same spread particles — gets cast as a shadow.

Documentation

Detailed documentation for the project can be found on our website: http://www.dxarts.washington.edu/entanglement

Acknowledgements

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Pampin, Juan; Kollin, Joel; and Kang, Eunsu. 2007. "Application of Sound Beams in Performance and Sound Arts." In the *Proceedings of the 2007 International Computer Music Conference*. Copenhagen.

Critical Play Interfaces

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This essay explores two recent game art works by Iraqi born artist Wafaa Bilal. In these projects Bilal adopts play as a conceptual and formal means for artistic and political intervention. The means and ends of linking play, creativity, and politics are theorized by Hakim Bey as Immediatism, that is "unmediated play" situated as "Temporary Autonomous Zones" (TAZs) or spaces that are both contingent to and outside the control of the prevailing order. In as much Bey's concepts and Bilal's practices converge in the dialectics of alienation and mediated experience, they also affirm the potential use of media for liberatory ends. It is useful to keep this seemingly paradoxical position in mind throughout the discussion.

Bilal's works combine net-based-performance and détournement of simulation technologies, game aesthetics, and public spaces for provocative ends. Détournement denotes subversion of both the source and the meaning of the original work to create a new work, as defined by Guy Debord. Bilal's projects connect conjectures of play and war in simulation products for entertainment and the military with formal perspectives on coexistence and conflict. The focus of these projects is on revealing the oftentimes atavist ideologies underpinning mainstream militaristic videogames, and their repurposing as critical play interfaces for protest.

For *Domestic Tension* (2007), the first game by Bilal and collaborators, the artist installed his living quarter at Chicago's Flatfile Gallery. For thirty-one days viewers could peep in on him anonymously via a live webcam and chat with him online. A rifle-sized paintball gun affixed to the camera allowed viewers to shoot at Bilal, or anything else in his room, twenty-four hours a day.

The gallery's press release states that the project attracted participants in over 130 countries. Bilal's site received 80,000,000 hits, while 60,000 paintballs were shot. Responses ranged from attempts at hacking the server to increase the frequency of shots, to counter-actions by participants taking turns to aim the gun away from Bilal. Technically trained participants volunteered their skills in devising continual readjustments to users' behaviors. Bilal kept his identity and motivations ambiguous throughout the project. In subsequent interviews the artist discussed it as an experiment addressing political, personal, and artistic concerns. He says that the idea was conceived while watching television,

> I was watching the news — in fact, ABC news, when they had an interview with an American soldier sitting in a base in Colorado, and she was firing missiles into Iraq after being given information by American soldiers on the ground in Iraq, and when asked if she had any regard for human life, she said "No, these people are bad, and I'm getting very good intelligence from people on the ground."

Bilal set out to establish a dialectic relationship between the alienating effects of mediated experience and U.S. media's sanitized reports of the Iraq war, which as he states, "consistently excludes images of casualties." "I want it to be far removed," says Bilal, "I want it to be video game-like. That's how we see this war, as a video game. We don't see the mutilated bodies or the toll on the ground." The absence of sound — users cannot hear the shots in the gallery — focus the images as ideologically resonant constructs. The images are conduits of detachment, constructed to position participants in the affective state of the soldier bombing targets in Iraq from a computer terminal in the United States.

Bilal's work posits involvement as an antidote for alienation. *Domestic Tension* is meant as a participatory anti-war statement. Bilal notes that he seeks "to engage audiences that are otherwise unlikely to actively participate in political or cultural discussions because they feel that these issues do not concern their everyday life."

The work's political statement ensues from a perspective of historical conditions as contingent on human actions. In interviews, Bilal relates the project to his previous oppositional artistic practices and status as a conscientious objector under Saddam's rule. He lived in Saudi Arabia's refugee camps for two years while waiting for the granting of political asylum in the United States in 1993 (he obtained a MFA degree in 2003 from the Art Institute of Chicago, where he currently teaches).

Figure 1: Virtual Jihadi

Figure 2: Domestic Tension

Bilal's confinement in a gallery and subjectification as a living target in an artwork dovetails with a tradition of endurance-based performance aimed at challenging conventional views about particular issues. Bilal's charged involvement casts trauma (Bilal's brother was accidentally killed by an American plane drone) as an entry point for countering de-humanizing perspectives about civilian war victims. At the core of these views is the term 'collateral damage,' an euphemism routinely used to refer to civilian casualties in present military, political and cultural discourses. By contextualizing personal trauma within a larger political and public context, Bilal points to the power relations implicit in these discourses.

He re-purposes the tools, spaces, and codes of the dominant orders to 'talk back.' To this end, Bilal circumvents the insularity and sedateness of a typical 'high-art' local and activates it as a site of protest by extending it to the internet. The framing of the work in the tropes of entertainment (videogames) enables a semiotic common ground with audiences conversant in mass-media representational modes, though not necessarily so with a high-art public. Similarly, the juxtaposition of real and virtual spaces in the work calls attention to these spaces as constructs, thereby potentially implicating the postulation of realism as an 'ideology-less' style by popular media as overly simplistic. Bilal's subsequent celebration as an Iraqi born digital artist (he was nominated Chicagoan of the year by the *Chicago Tribune* in 2007) further implicates popular media's spectacular portrayals of 'the other,' as either helpless or irrational, as reified representations (i.e., as hyper-real signs with no reference to 'real people').

In *Virtual Jihadi* (2008) Bilal explores the use of videogames for propaganda. For this project he appropriates an online FPS, *The Night of Bush Capturing* (2006). The game gained notoriety as an Al-Qaeda production (its goal is to capture Bush). This game is itself a mod for *Quest for Saddam* (2003), a commercial game widely praised in the US media for its subject matter — the capture of Saddam, despite of its stereotypical images of Iraqis.

Bilal's avatar appears in the game as an Al-Qaeda suicide bomber dressed in 'traditional' arab warrior garb seeking revenge for his brother's death. "This artwork," he states, "is meant to bring attention to the vulnerability of Iraqi civilians, to the travesties of the current war, and to expose racist generalizations and profiling…games such as *Quest for Saddam* or *America's Army* promote stereotypical, singular perspectives." Bilal's intention with the piece is to expose the violence, racism, and propaganda disguised as entertainment.

The two galleries first showing the work, respectively: Rensselaer Polytechnic Institute (RPI) and The Sanctuary for Independent Media in Troy, NY, were closed down under the pressure of Campus Republicans claiming that Bilal is a threat to national security. Students, faculty, and Troy residents are rallying to reverse the school and city administrators' censorship of Bilal's work—as an exemplary TAZ their spontaneous actions are organizing themselves around the politics of the aesthetic.

As experiments Bilal's projects are the more compelling in that they perform the difficulty of re-purposing videogames for art-activism, as apparent from unintended receptions. For a significant number of participants the *Domestic Tension* game interface signaled permission to act out disturbing behaviors, and the narrative of *Virtual Jihadi* facilitated recuperation by reactionary forces. Bilal's projects thus problematize the use of videogames for activism vis-à-vis their common connotations as either infantilizing or nefarious entertainment.

References and information are omitted for brevity. Please refer to Bilal's website: <http://www.crudeoils.us/>

Beyond the Table Top, Everyman, The Ultimate Commodity

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Introduction

Our aspirations are to create new ways of employing augmented reality (AR) technology in performative experiences. The project draws directly from a narrative that has a conceptual aspect that uses the technology as an integral part of the story. Gopal Baratham's *The Ultimate Commodity*[1] forms the basis of the narrative and is adapted in the experimental theatre play, to become, Everyman, The *Ultimate Commodity.*[2] The AR technology we employed in bringing this story into production served as the ideal vehicle with which to explore, recreate, and represent the unique themes of original text and the adapted stage play.

The ultimate commodity — the story

"The Ultimate Commodity" imagines a future in which a scientist has created a formula which causes all those who ingest it to physically change so as to become universal organ donors. In this imagined future, the government has taken the liberty of adding this formula to the city's drinking water (thus fulfilling the country's destiny where the claim that "Our people have become our only resource. . . has become literally true").[1] However, it turns out that one side-effect of the formula is that it also causes the distinguishing characteristics of population to disappear, so that every one begins to appear morphologically similar to each other.

Against this backdrop our theatre project focuses on a small part of the larger story; on the identity crisis which occurs when a father confuses his daughter with his wife. And as it turns out, AR proves to be ideally suited to the telling of this story due to the potential for having the father played by a live actor, while the other two characters are played by pre-filmed three dimensional reproductions of actors, superimposed into the scene with the live actor. The simultaneous staging of "real" characters with "simulated" or "morphed" characters also resonates with the theme of identity construction which is a prevalent theme in Baratham's original text.

Implementing "morphed" characters on stage

We began by considering several methods for employing "morphed" characters on a live stage. As technically the theatre play is about making the actors look alike each other, the system we use has to be able to replace one actor's head with another's, and, let the audience see several identical faces on the stage simultaneously. Our implementation uses a hybrid vision — inertial sensor approach, as described below.

Hybrid vision — inertial sensor tracking method — the sensor fusion approach

This method uses cameras and sensors to track the position and orientation of the actor, and then superimposes a 3D model of a head onto the actor in rear screen projection. Generally this method requires beacons and/or sensors to be attached to the actor so that he or she can be tracked. In a broader technical sense, this technique of combining and extracting useful information from several similar or different sensors is called "sensor fusion".[3] This is especially common with camera and inertial sensor, where they could compliment each other in terms of performance under various ambient conditions.

The lack of luminosity of the lights in the theatre is a big challenge for vision tracking systems. We thought that using bright luminous colors as beacons would improve the tracking performance greatly. Therefore we let the actors wear special light-emitting diode (LED) headsets which are designed for tracking purposes; the two cameras hang above the theatre stage track the color of

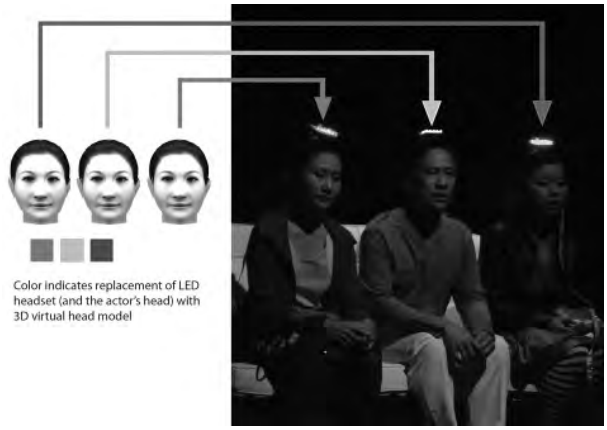

Figure 1: The actors' heads are replaced by 3D head models, according to the color of the LED headsets the actors are wearing.

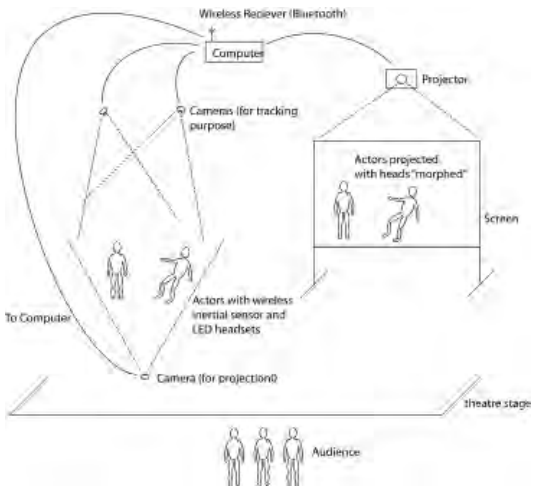

Figure 2: Setup of augmented reality system for theatre. The audience sees the juxtaposition of real and augmented spaces.

the LEDs. The orientation data from the inertial sensor is transmitted to the host computer via Bluetooth. In this way, the actors had complete mobility, while their entire head could be replaced with a three dimensional head of the creative director's choosing (Figure 1). The system set up is shown in Figure 2.

The array of light-emitting diodes (LEDs) could be tracked much more easily in a darkened theatre (it is also worth noting that in the place of distinct markers we employed different color LED displays for the tracking and superimposition of up to six several different heads over the actors, depending on the color of the LED display).

The tracking of LEDs only provides the spatial information (the x, y, z location of the head in the theatre space). It is also necessary to acquire the orientation of pitch and tilt of the head as well. To accomplish this, a wireless motion sensor, comprised accelerometers, gyroscopes and digital compasses and Bluetooth transmitters, was embedded underneath the LEDs. The hybrid LEDs and sensor technique allow for the full six degree of freedom information of the head to be known. The tracking camera at the front of the stage was utilized to capture the action and then projected in the staging.

Modeling and animation (lip-synching) of 3D head

The 3D model of the actor's head was constructed from a 3D model of a generic head. Six different views of the actor's face (each made-up with 15 small markers) were then captured by 6 pre-calibrated cameras. The 2D points on the captured images — and 3D points on the generic model corresponding with those markers on the actor's face — were selected manually. After that, the 3D generic model was morphed iteratively until the distance between the selected 2D points on captured images and 2D projections of selected 3D points on the generic models was minimized on all 6 different views.

Pre-recorded voice tracks were then embedded in the live video stream (synchronized with the script and action) and a lip-sync technique was used to animate the 3D head's lip movement. Each model was constructed with a sequence of "visemes" that are interpolated (morphed) to synchronize with the voice track. This makes the model "talk" in real time and in sync with the other actors on stage.

Acknowledgement

The original story *The Ultimate Commodity* was written by the late Dr. Gopal Baratham, a Singapore writer and surgeon. The authors would like to thank Diego Diaz, Clara Boz for their contributions in the performance *The Ultimate Commodity* v1.0 which took place at the Esplanade theatre in Singapore in 2006.[4] The author would also like to thank the actors, actresses and crew of the *Everyman — The Ultimate Commodity* v2.0 performance which took place in the Fringe Festival in Toronto, 2007: Gerald Chew, Sara Yang, Debra Teng. Gerald provided significant contributions in dramatic direction. The play was produced but the Interaction and Entertainment Research Centre with creative direction by the author, and written by the second author.

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1 *Ultimate Commodity*, Gopal Baratham's *Figments of Experience.*

2 *Everyman, The Ultimate Commodity*, Daniel Jernigan Also see acknowledgements in section 4.0.

3 Azuma R., Lee J.W., Jiang B., Park J., You S. and Neumann U. 1999. "Tracking in unprepared environments for augmented reality systems." In *Computers & Graphics* 23(6), pp. 787–793.

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Self-styling Locality in *Cryptic: A Traveler's Diary*

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Almost from the first media products created by sub-Saharan African media artists, theories of identity have relied on "a narrative of liberation built around the dual temporality of a glorious—albeit fallen—past (tradition) and a redeemed future" promised by independence from colonial rule (Mbembe 2002, 249-250). Operating at the center of these constructs was a struggle to reclaim an *authentic* African self from a colonial legacy that dehumanized and denigrated black African culture. As the redemption promised by Independence failed to materialize, however, and globalization grew in influence, the old boundaries of locality and race as markers of authentic Africanness appear to have been destabilized. Instead, "African imaginations of the self" are now moving beyond the restrictions of "race and geography" to propose new models of identity that posit self as "born out of disparate but often intersecting practices" which "open the way for *self-styling*" (242). Self, therefore, becomes a temporal condition that transcends geography, and is created by moving forward in time and repeatedly challenged and changed by traversing flows of personal, local and global histories.

By drawing "referents from both local and global sources," IngridMwangiRobertHutter's digital artwork, *Cryptic: A Traveler's Diary* (2007) challenges static modalities of self and locality in favor of open-ended self-stylings that view identity as a process of becoming (265). Dedicated to surmounting difference in its many forms, the collective comprised by IngridMwangiRobertHutter brings together artistic expressions that bridge racial and geographical boundaries by merging disparate times and locales into a transglobal expression of self. As Achille Mbembe argues, theories of African identity have long spun between the twin poles of what he describes as "nativism" and "Afro-radicalism" (240). Under these schema, African identity is predicated on racial difference and/or "Marxist and nationalist categories" in order "to develop an imaginaire of culture" (240). However, as the pressure of globalism contributes to the economic and political strife of African nations attempting to rise above subsistence economies, these categories have begun to break down as absolute determinants of Africanness. At the heart of these arguments is the notion that, just as Africa has been forged at the crossroads of multiple histories, so too have African identities. This is not an abrogation of the histories of colonialism that oppressed African cultures. Instead, it is an acknowledgement that such colonial legacies have created a variety of investments in Africanity, not all of which are inscribed within blackness alone. Instead of configuring Africanness within "territorialized identity and a racialized geography" it becomes possible, as Mbembe suggests, to view African identities "as a vast network of affinities" that encompass the many histories found within the continent's boundaries (257, 258). From this perspective, Africans are no longer isolated victims at the mercy of globalizing influences, but are actants on the global platform.

For digital artists IngridMwangiRobertHutter, trans-nationality is inherent in their approach to art and African identity. Ingrid Mwangi, born in Kenya of Kenyan and German parents, and Robert Hutter, whose background is German, chose to become identified as a collective under the name IngridMwangiRobertHutter in order for their work to reflect "a level of equality in respect to gender as well as to cultural/geographical backgrounds."1 Thus, the collective, like the works it generates, spans the boundaries between nations, bodies and identities, and interrogates the spaces between Africa and colonialism, black and white, and self and other.2

Cryptic: A Traveler's Diary is an example of such an investigation. The artwork was originally exhibited as part of a group exhibition entitled *30 et presque-songes* which took place in September 2007 at the Centre Culturel Albert Camus in Antananarivo, Madagascar. A transdisciplinary group exhibition, *30 et presque-songes* featured artists from Madagascar and around the world working in a variety of disciplines including design, video, fashion and architecture, among others. As an installation, *Cryptic* is comprised of a large-scale black box which gallery spectators enter. The floor of the box is light-colored and covered with various designs comprised of black liquid chalk letters inspired by

alphabets from different cultures. The walls, which are black, are also similarly decorated, but in this case, the designs are executed in white liquid chalk. By blurring the boundaries between alphabet and artistic design, *Cryptic* draws attention to the process of cultural transfer and the impossibility of assigning static meaning to language, art or self in a global context where journey is as much a function of self as origin.

In synchronicity with the designs, *Cryptic* evidences the afilliative process of journey and self through a video loop projected on one wall. The images of the video were shot over the length of a year and document the collective's travel through a variety of nation spaces.[3] Images for the video were then created by digitally combining landscapes of Nairobi, Tokyo, Heights of Aripo in Trinidad, Western Desert of Egypt and Dakar into an imaginary locale that questions how journey and intersecting histories affect identity. For example, one striking sequence begins with a long shot of a desert. Over this is superimposed a medium long shot of Mwangi standing at the windows of a skyscraper overlooking a Tokyo cityscape. As the two images merge, the hills of the desert seemingly become the background of the cityscape, combining geography, space and time. Mwangi's figure, prominent on the left side of the image, mediates between the two spaces as she inscribes invisible letters on the window with her finger. The sequence then cuts to a medium shot of Mwangi at the window, still tracing invisible letters. Again, the city scene is superimposed over the desert, but this time a series of shots of Mwangi walking across the desert landscape is also visible. As the desert figure walks towards the city figure, the cityscape fades to reveal Mwangi, in a long shot, walking alone across the desert. The effect of this sequence suggests that all journeys across borders are connected, and thus inscribe that connection on self. In this context, Mwangi's identity is not only African and German, but also an amalgam of all the borders and histories she has crossed in her lifetime. Viewed in this fashion, African identity ceases to be a static product of a singular history of oppression, and is instead portrayed as an active agent in affecting the global flows of culture.

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1 This statement is taken from IngridMwangiRobertHutter's website. For more information, please consult IngridMwangiRobertHutter's "The Collective Idea. Reflections on the Retrospective Formation of a Collective" located at http://www.ingridmwangi.de/mh/text_ingrid_mwangi_collective.html.

2 The collective's works have been exhibited worldwide, and include such works as *IngridMwangiRobertHutter: Selected Videos* at The Rotunda Gallery (2007) in New York, *Man of War* (2006), at Kunstverein Ingolstadt in Germany and *Beauty/beast* (2005) at the Wella Museum in Darmstadt, Germany.

3 See photographs of the installation and artists' statements at the following URL: http://www.ingridmwangi.de/mh/cryptic_a_travelers_diary_2007_installation.html

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Transactional Arts — Interaction as Transaction

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Interactive media, especially the internet, are often used in an economic context where interactions are actually transactions. We focus on artists, who apply or use economic principles and coin those works as "transactional arts". We will observe that many accomplished new media works actually have transactional features.

The transactional component

A basic form of interaction may be defined as a kind of cybernetic loop in which two agents (machine or systems) reciprocally listen, speak and think. As an analogy, a simple transaction may be viewed as a circuit, in which two agents exchange some sort of value. In the artistic context the transactions may involve the artist, the audience, but possibly also subcontractors or contingent market-participants. The notion of value as the entity to be exchanged, often becomes the central issue of the artwork. The setting of the transactions may vary. Some may take place within the art world, others involve the commercial domain and some artists even create their own marketplaces. In this sense transactional arts stand in the tradition of art-forms taking place in the social sphere.

Duchamp as an early transactionalist

Marcel Duchamp may be considered as an early "transactionalist". In 1919 Duchamp paid his dentist, Daniel Tzanck, a passionate art collector, with a hand drawn enlarged facsimile cheque as compensation for services rendered and as a piece of art at the same time. In 1924 he issued 30 "Monte Carlo Bonds" over 500 Francs each, and apparently raised funds from his friends in order to play Roulette at the Monte Carlo Casino promising 20% p.a. interest redeemable in three years. However, his gambling strategy did not beat the odds, but he did not lose either and paid only 10% interest, one year later. In purely financial terms, the purchase of the bond may appear as a loss, but considering the deal as the acquisition of an original Duchamp artifact (that even earned a 10 % return) it may be construed as a great buy. As with his ready-mades, the accomplished artist Marcel Duchamp creates value by an act of declaration — here in the form of an amicable deal (a contract represented by an artistically designed and signed bond certificate) with his audience, i.e. collectors. Interaction becomes transaction manifested as a financial instrument, issued and authorized by a self-empowered artist who actually benefited financially.

Autonomy of art

Artworks with a transactional component tend to challenge a fundamental western aesthetic conception demanding art to be entirely separated from the economic sphere. So was Duchamp repeatedly accused of lacking detachment from material concerns, though he appeared to be mainly interested in the speculative and provocational aspects of his works. Does transactional art automatically violate the principle of the autonomy of art? If art today can reflect any subject and strategy of any context in society, then why not the economic transactions which ubiquitously surround us anyway?

Art as a give away

In many cases where a transaction happens between artist and audience, the artist deliberately wastes or destroys a potential gain. Thereby he apparently contradicts the central premise of modern economics assuming the "rational agent" pursuing maximal profit. Yves Klein sold void space in Paris for gold and threw it afterwards into the river Seine. Zoe Sheedan Soldana breeds plants as an online performance and gives them away at the end of the project. Happenings provided all sorts of amenities to the audience in the seventies. In the light of an "attention economy" where "eye-balls" are the currency, these transactions may appear less asymmetric.

Counter-economies entrenched with the real world

Creating counter-economies which are more or less entrenched with the real world is a strategy only few artists have the resources to do. The Dutch artist group

Atelier van Lieshout designed for their utopian state-like territory in Rotterdam a currency called AvLs, which are convertible at an exchange rate of 1:1 into beer. Entrenched with a real world are also many economies which emerged around virtual worlds and multi-user online games economies. For example, they provide support for players not only to trade players and virtual artifacts, but also facilitate the off shoring of labor intensive activities to low wage countries.

Mimicking and applying business practices

Many artists, especially media artists, have actually used and applied business practices. The art groups Etoy and RTMark not only mimic the organizational structure, appearance and rhetoric of multi national corporations, they also issue stocks in order to allow the audience to support their activities. Interestingly enough, these groups use capitalistic financing techniques in order to realize critical artworks with an anti-capitalistic flair. The transactions involved may be seen as some sort of commissioning or sponsoring which has become part of the artwork itself. The art-group "We make money and not art" uses Google ads to generate revenue from the hits on their website. For the digital activism project "Google Will Eat It Self" the group Uebermorgen designed a value chain as a closed circuit of transactions: they first generated profits by manipulating the Google ad-sense program and used these funds to buy stocks of Google.

The principle of division of labor has become part of the artistic attitude for artists like Andy Warhol, Jeff Koons and Mark Kostabi, who outsource parts of the creative production. Santiago Serra, by paying drug addicts in their preferred drugs to perform in his art, seems to convey a critical view on the nature of employment.

Relying on his expertise as a non-professional stock trader, artist Michael Goldberg played the stock market for three weeks from a gallery generating charts and other forms of data visualization as output. He had built a kind of strategic interface to the online market in the form of a tower. Goldberg had raised AU$50,000 from befriending investors, traded it without personal risk and closed with a AU$1,000 loss.

Offering transactions

Christine Hill has chosen the form of a shop for her installation "Volksboutique" in which she initially sold objects. During her "Ebayday" performance curated artists could sell their work. So called "auction artists" use existing market platforms such as Ebay for highly conceptual artworks to auction off e.g. their time and availability (Carey Peppermint), private data (Jeff Gates), or their "body, with minor imperfections" (Michael Daines). Often artists experience no demand for these offers at all. Creating the potential of a transaction becomes a means of artistic expression, even if the transaction actually never happens.

The market as an art form

A. Galloway states that today's internet protocols are "synonymous with possibility" and that the internet facilitates the economic form of market places. Media art has always been the creation, design, structuring and control of possibility spaces (the set of choices offered by non-linear media) and artists have attempted to continuously expand these. One transactional artistic strategy is the creation of market places itself. The artist may not participate in any transaction, but merely provide the platform for potential transactions.

With "Idea Futures" Robin Hanson created a market platform to bet on opinions and considered this online market a potential tool for collective decision making. The project "Open-Clothes.com" envisions a platform for all transactions and interactions around the design and distribution of customizable clothes. The art foundation Mediamatic offers a matchmaking service with special actions facilitating, e.g. encounters with "Russian Brides." Christin Lahr offers a market for the exchange of personal data as a critical work on privacy issues in the internet.

For these artistic markets the principles of web 2.0 internet economy seem to apply. As the ideal media to match niche demand and niche supply, these markets become niche products themselves, often defying their lack of liquidity. Collages of transactional modules may be the meshed-up in this art form, similarly to the value chains of online businesses.

In the current globalized economy, with its decline of the influence of the nation state as some claim, market mechanisms seem to be more powerful than ever. Reflecting them with artistic means is a justifiable task.

Transactional arts — art with incentives

Transactional art operates with incentives which become part of the artistic material. Deals are constructed which appeal to the value systems and/or rationality of the participants. The values to be exchanged may significantly differ. The success of an artwork seems not be depended on a successful transaction. However, transactional arts are always situated within the contexts of economic resources and spheres of power.

Full text with references available under www.transacitonalarts.com and www.transactionalarts.wordpress.com, danielaplewe@nus.edu.sg

Marcel Duchamp. (American, born France. 1887-1968)
Monte Carlo Bond (No. 12). 1924. Cut-and-pasted gelatin silver prints on lithograph with letterpress, 12 1/4 x 71/2" (31.2 x 19.3 cm). Gift of the artist.

Ground Truth: Weather and Climate Observation and Embodied Experience in Antarctica

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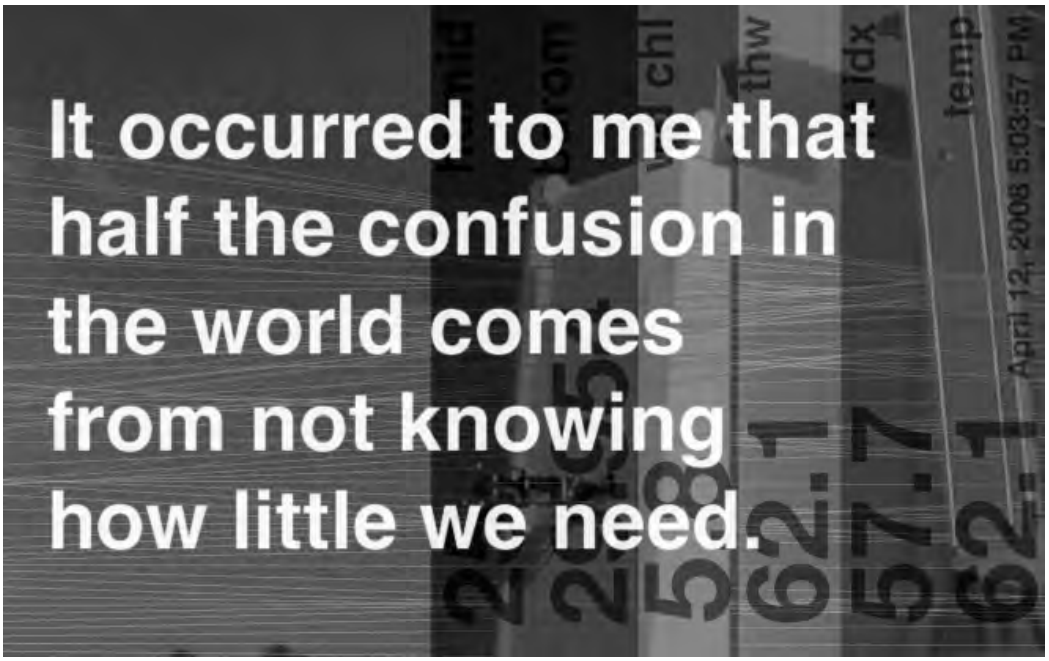
Introduction

Throughout the world from Antarctica to Greenland to the middle of the Pacific Ocean, people are stationed in remote, uncomfortable and hazardous locations for the sole reason of observing and recording the weather. Meteorologists, military and commercial pilots, air traffic controllers, and many others depend on this information (what they call 'ground truth'), despite instruments that can provide precise and often much more detailed information without endangering human lives.

Why, with sophisticated instrumentation and remote sensing, do we depend on humans on the ground looking up at clouds? What is the meaning of 'ground truth' and can it inform and enhance our relationship with the environment? The project *Ground Truth* attempts to answer these questions through a short documentary featuring interviews and documentation of weather observers at the South Pole and McMurdo Station, and of weather and climate scientists as they discuss, maintain and gather data from remote sites on Ross Island and the Dry Valleys of Antarctica, and a temporary public art installation of an automatic weather station with real-time visualization and sonification of weather variables.

Project background

The *Ground Truth* project emerged from my National Science Foundation Artist's residency from December 2007 — January 2008 working alongside scientists gathering weather and climate data. I traveled to the McMurdo Dry Valleys Long Term Ecological Research Project field camps and the Antarctic Automatic Weather Stations, and to the geographic South Pole to document weather monitoring, including a daily balloon launch and one of the most advanced weather stations in the world. My initial project, *90degreessouth.org*, was designed to communicate both the aesthetic beauty and the scientific importance of Antarctica to global climate. Although the project could have been done at any time, it is especially important in 2007/2008, the International Polar Year, because it examines the region's impact on global climate.



90degreessouth.org began as a blog featuring soundscape recordings, audio interviews with scientists and a large database of images. With the help of Hunter College Integrated Media Arts MFA graduate Sha Sha Feng, the project is now developing into an online interactive mapping project using rich media in Google Earth, YouTube and Flickr to present interviews, sound, video and other media related to Antarctic weather and climate.

While working at McMurdo Station, I found there was a great interest in the soundscape among the community, and that Antarctica contains some of the most unique and unusual sounds in the world. I held a series of field recording workshops called 'sound walkabouts' that resulted in an electro-acoustic concert called *Sonic Antarctica. Sonic Antarctica*, now being developed into an audio CD, is a collection of field recordings and soundscape compositions celebrating the diverse sound environment of Antarctica. From these two projects, the *Ground Truth* project evolved.

Project development

One of my interviews was with Don Voigt of the Pole Net project, a large-scale project to place passive seismic sensors along almost the entire Trans-Antarctic mountain range. Our conversation was one of the first times I heard the term 'ground truth':

> "…part of what we were doing was sort of 'ground truthing' where we were getting very detailed information about the ice…because you can get features in the radar data that unless you've been on the ground and looked, you don't know what those features represent." Don Voigt, audio interview on *90degreessouth.org*

I learned that there are many more humans observing the weather in Antarctica than automatic weather stations and began interviewing scientists about the purpose of the human observers. Dr. John Cassano, professor of meteorology at The University of Colorado Boulder and a principal investigator on the Antarctic Automatic

Weather Station project this year, said:

> "I think there's a real value to human observers… being on the ground and seeing what a place is like and seeing what the weather is like there gives you an intangible sense of the location and improves your interpretation and your understanding of what your computer model or the weather data is telling you." Dr. John Cassano, video interview on *90degreessouth.org*

Dr. Andrew Fountain, who now leads the Dry Valleys Long Tern Ecological Research project, echoed Dr. Cassano from an ecosystem monitoring perspective:

> "Just because you have the data doesn't mean you understand the system. It's important to come down and view the landscape and in our case view the glaciers, and seeing how the glaciers are reacting to these changing environments, and that kind of feeds into our understanding and our non-quantitative knowledge."

While conducting interviews with scientists, I read many historical accounts, one in particular was written by the early 20th century explorer, Richard Byrd. His book *Alone* published in 1938, tells the story of his solo winter-over at an inland camp. Byrd wrote a lot about weather phenomenon and instruments. Here he speaks about his physical and emotional connection with these machines while living alone in Antarctica:

> "… if anything was eventually to regularize the rhythm by which I should live at Advance Base, it would not be the weather so much as the weather instruments…If I had any illusions as to being master in my own house, they were soon dispelled. The instruments were masters, not I." Richard Byrd *Alone* p. 52

In his diaries, Byrd talks several times about what I see as a kind of symbiotic relationship between himself and the weather instruments:

> "Ah, yes. Tick-tick, tick-tick-tick, tick. The busy, friendly voices of the register and thermograph on the shelves, each distinct and dramatic- sounds I can understand and follow…As I dread getting up, I just lie and listen to these sharp, clean beats, letting them form little conversations, little rhymes, even short stories in my mind," (Richard Byrd *Alone* p. 76).

The short documentary includes excerpts from the interviews with scientists and the temporary public art installation consisting of a modified weather station interpreting data in real time gives audiences have the opportunity to learn about the kind of instrumentation used by the scientists and experience the data being collected through visualizations and sonifications. The visualizations include video footage of Antarctic weather stations and quotes from Richard Byrd.

These projects have been supported by: The National Science Foundation Antarctic Artists and Writers Program, The University of Colorado, Boulder Center for Humanities and the Arts, Department of Art and Art History, ATLAS Institute, Undergraduate Research Opportunities Program, and the PSC-CUNY Research Foundation.

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Same Difference:
A Note on the Interplay of the Physical and the Virtual in the Creation of a Digital Image Series

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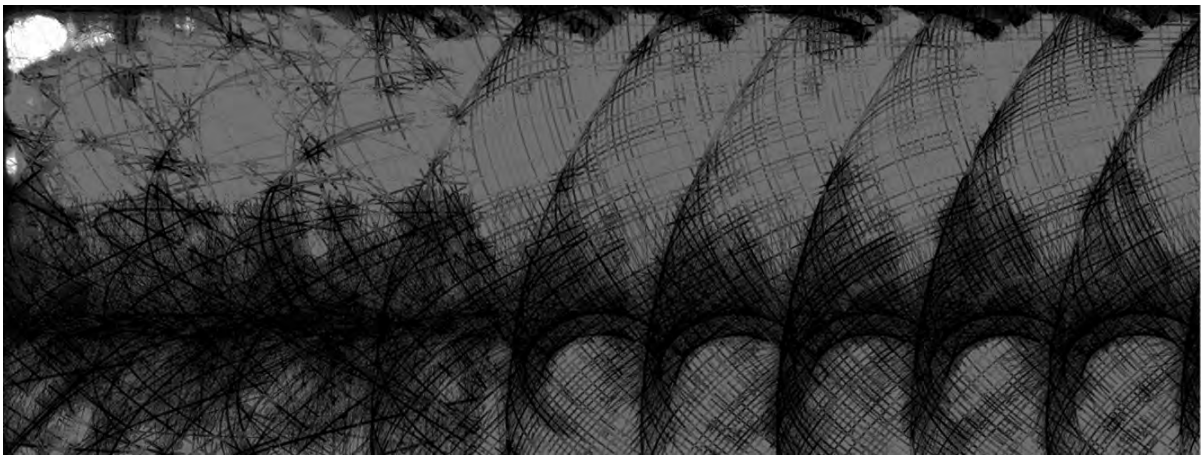

if-then-else. 2007/2008. Nigel Power

Overview

On one level, Same Difference is simply an exploration of algorithmic imaging. The project takes as its starting point a single simple graphic routine. This 'drawing engine' takes geometric picture primitives and transforms these repeatedly using a combination of regular and random variables, 'stamping' the resulting forms iteratively on screen to create more or less complex linear forms. The many hundreds of images that are quickly generated in this way are mined for thematic potential, and candidate 'drawings' then explored using a small set of simple image processing algorithms, or 'painting engines'.

On another level, however, the project asks questions about what it means to create images computationally in the first place. In practice the neat method described above is messy and ambivalent, the division of labour harder to fathom. The process moves unpredictably back and forth between the physical and the virtual, the desk and the screen, between sketch, program, run-time animation, annotated print and writing. In doing so, the work explores the complex, ambiguous and reflexive relationships between these spheres of activity and embodies the central aesthetic concern of the work; liminality.

The thematic potential alluded to above is more difficult to verbalise than either the idealised or actual creative processes. This is because, on the one hand, it is impossible to extract formal concerns from technological or processual ones without loosening the intellectual coherence of the work overall. Suffice to say that a process that lives in liminal regions results in outcomes that themselves are explorations of the liminal; the contested territories of figure and ground, presence and absence, persistence and change, abstraction and figuration, the virtual and the physical.

Discussion one: writing the picture

> *"When we successfully produce an intricate effect with simple program means, this creates in the observer — who of course is in the final analysis identical to the user himself — the impression that the achieved effect is out of proportion to the modest means, the impression of a hiatus between means and effect."* Slavoj Žižek[1]

Žižek's description of the ambivalent and seductive nature of the computer-generated image chimes strongly with my experience of producing imagery

algorithmically. Indeed, to a large extent, the series of images that are the subject of this paper are ways of confronting, exploring, questioning — bridging even — the lacuna between means and effect that Žižek brings to light.

In analogue image making — drawing, for example — the relationship between gesture, mark and meaning is immediate, unfolding over time through a series of what we might call — following Merleau-Ponty's characterization of our most fundamental ways of interacting with the world — perception-action cycles.[2] Whilst intentions frame and direct action, these themselves take the form of intricate feedback loops, modified reciprocally as marks are made and the image reveals itself. Scrivener has usefully described sketching as a form of conversation with oneself and this seems persuasive.[3] Artists and designers engage in a dialogue with their medium, or perhaps better still, think through the medium, and it is this direct and dynamic interplay of thought, gesture, material and representation that appears fatally wounded in the algorithmic imaging process.

The act of drawing forth a picture by visceral, uncertain and immediate mark making is displaced by the premonition of an image, the pre-packaging of an image in the most 'abstract' of representations (code), and even the ceding of control of image making from artist to machine. To this extent, algorithmic imaging as it is usually understood involves '*writing the picture*' and for this reason more than any other perhaps, it is dismissed — outside the electronic arts community at least — as somehow lacking the authenticity and aesthetic credibility of that which is 'embodied' in or essential to the analogue picture. The hiatus between mean and effect identified by Žižek then, repeats itself in other equally troubled oppositions; lacunae between subject and object, between the physical and virtual, and, importantly between the quintessentially human and the quintessentially technological.

Discussion two: 'hysterical programming'

> *"It is of particular interest how on the level of the program itself, this opposition repeats the male/female difference in the form of the difference between "hard" (obsessional) and "soft" (hysterical) programming — the first aims at complete control and mastery, transparency, analytical dismemberment of the whole into parts; the second proceeds intuitively: it improvises, it works by trail and thus uncovers the new, it leaves the result itself to "amaze", its relation to the object are those of a "dialog.""*
> Slavoj Žižek[4]

In this sense, my own work proceeds "hysterically'. By so doing I attempt to make sense of the liminal territories that appear in the halo of the algorithmic image. In the early 1990's, an inability to grasp C++ — or at least to make it generate aesthetic objects quickly — led me to scripted languages and ultimately to the now almost obsolete yet incredibly messy and forgiving, quasi OOPs language — Lingo.

Nevertheless, platform and tools aside, all algorithmic imaging shares by definition a common core, the algorithm. It is the way that the algorithm is 'nurtured' that defines particular aesthetic approaches, values and meanings. In my own work, very simple algorithms — the drawing engines mentioned above — serve to stake out a design world. They define a set of formal possibilities, limiting and constraining what is possible. All of the print pieces in the Same Difference series (currently thirty one 'finished' pieces and many hundreds of partially worked 'candidates') grow out of the same algorithm; a banal set of instructions that draws, moves and transforms a graphic primitive (and, interestingly perhaps, was written in the early 1990's as a modular teaching tool for design students fearful of entering the mathematical aura of computer science).

The combination of predictable and aleatoric variables sets up a creative tension between the foreseen and unforeseen. The strict limits imposed by the algorithm are transcended and the "new" uncovered or at least suggested. Like the feedback loops that characterize analogue drawing, novelties draw attention to themselves as they unfold, appear pregnant with possibilities, urge further exploration. And here too the process transcends the self-imposed constraints of the algorithm and introduces dialectical possibilities into the work. The medium affords rapid image generation and an infinite series of different candidate images is possible. Yet to appreciate the differences and evaluate the possibilities for development within and between the series' — requires bridging the all too often discrete worlds of the physical and the virtual. Images are printed, worked upon directly and suggestively with pencil and pen; they become diagrams — physical instantiations — of their own future development.

More or less, this process lies at the heart of each of the images in this series. Of course, the approach as outlined only partially completes the image by generating what I, for want of better word, call 'drawings'. The more complex — but no more important — algorithms that power the 'painting engines' then transform these wireframes. Here the relationship between image and code becomes loosened for artist and viewer alike. Because it is here that formal and aesthetic variety emerges and the qualities redolent of analogue mark-making techniques emerge. It is here that spirographic patterns and structures seem to dissolve and become *picture-like* in the everyday meaning of the term. But that is another story for another day.

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Virtual Emotions and Facial Expressions

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I am using 3D scanning devices in an AHRC-supported project developing a prototype for emotional facial expressions in animals and humans. The first screening was at the Triangle project space at Chelsea College of Art & Design in London in February 2007.

Figure 1: documentation shot of the installation 'Virtual Emotions', Triangle project space, London, 2007.

My project 'Mapping Virtual Emotions: 3D-surface capturing of animated facial expressions in animals and humans' is in progress. The focus of this work is a theory suggested by Charles Darwin (1872) in Ekman (1998) over 125 years ago. It is the idea that our human facial expressions, contrary to what we often like to believe, are not unique to human beings. Darwin's metatheory of the continuity of species explains that neither our facial expressions nor the musculature in the face are unique to humans. Both are the product of evolution and internal physiology (Ekman 1998).

I use a 3D high-resolution laser scanner to capture animal and human faces. I use the data from these faces, animate and then combine them with human emotional facial expressions. In doing so it is hoped to visualize through critical experimentation what evolution has selected and accommodated. While it is often through new technologies that we aim to expand our current understanding of the world, I would question whether it is possible to imagine beyond this in terms of human perception and the way we analyze and rationalize, taking into account the emotional responses we usually house as human beings.

As suggested in my original proposal, I have studied theories of emotions through the works of Damasio, Darwin, Ekman and LeDoux. Paul Ekman's work was particularly relevant to the study of human facial expressions, while I returned to Darwin (and Ekman's commentary on Darwin's book 'The Expression of the Emotions in Man and Animals', from 1872) for details on animal facial expressions.

Building on my research into consciousness studies and emotions, I have developed a new artwork to reveal aspects of characteristic human emotions (i.e. laughing, crying, frowning, sneering, etc.), which uses new technology, in particular digital scanning devices and special effects animation software. The morphing of the human and animal facial data are not merely layers of the different scans but an algorithmic programme has been applied which merges crucial landmarks in the animal face to match with the human. The results are morphings of the physical characteristics of animals with the emotional characteristics of the human face in 3D. Examples of stills and animated sequences are given below and in more detail during the presentation in Singapore.

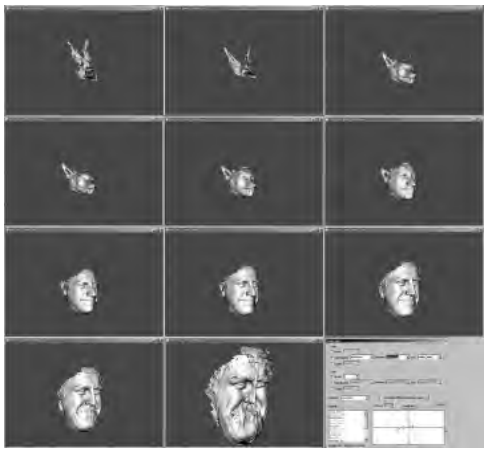

Figure 2: Screenshots from the animation '3D Virtual Emotions'

My previous research into the dreaming brain (Rauch 2005) led me to the issues of emotion. Dreaming is driven by the forebrain system of the brain, and, as Hobson justifies, it is primary emotion that seems to shape the dream plot. The limbic system and, in particular, the amygdala shown in PET-scans are hyperactive, causing emotional direction in dreaming (Hobson 2001). One of the leading figures in emotion research is Antonio Damasio.

Damasio discusses the error of the Cartesian view wherein scientists studied only the body, while matters of the mind were left to religion and philosophy. Only recently have cross-disciplinary approaches emerged in the area of brain/mind study. Damasio's concern about this mutually exclusive dualism, where the brain and mind are seen as separate entities, is of interest for consciousness research. "The organism constituted by the brain-body partnership interacts with the environment as an ensemble, the interaction being of neither the body not the brain alone" (Damasio 1994). Although consciousness arises within the brain it is still questionable whether this therefore situates the mind in the "physical realm" of the brain (Damasio 1994).

Damasio considers the mind not only to be embedded in the brain but in the rest of the body too. He does not only challenge the notion of a separation between brain and mind, and the Western tradition of dividing brain experience from cultural experience, but also the division made between reason and feeling. He investigates issues of decision-making, and states that if there is an impairment of emotions, we would not be able to be rational either. He suggests that a correspondence between emotional feelings and the rational mind is vital. In the words of Damasio "the mind arises from activity in neural circuits" (Damasio 1994). He does not say that the mind is in the body, but "that the body contributes more than life support and modulatory effects to the brain. It contributes a content that is part and parcel of the workings of the normal mind" (Damasio 1994).

According to Damasio, mind is an integrated function of an advanced organism arising through evolutionary selection. The developing brain, when it became complex enough, produced mental responses (i.e. thoughts) that may have contributed to survival. As he states: "the minded brain minded the body" (Damasio 1994). The survival mechanism can be thought of as a greater appreciation of external circumstances, with a "prediction of future consequences by way of imagining scenarios and planning actions" (Damasio 1994).

I believe that the face represents a particularly important part of the body. Emotional facial expressions can reveal conscious and subconscious feelings to the outside world. My experiment with the scanned animal and human faces suggests a seamless evolution of emotions from the animal to the human. In addition it suggests the virtual model to be integrated in a larger idea of realities that exist in parallel. The natural reality seems to ask for a synthetic addition.

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1 Darwin, Charles. 1872, 1998. *The Expression of the Emotions in Man and Animals*, introduction and afterword by editor Paul Ekman. London: Harper Collins Publishers.

2 Ekman, Paul. 1998 ed. *The Expression of the Emotions in Man and Animals*. London: Harper Collins Publishers, pp. 25 – 28.

3 Rauch, Barbara. 2005. Ph.D. *Natural and Digital Virtual Realities: A practice-based exploration of dreaming and online virtual environments*. University of the Arts London.

4 Hobson, Alan. 2001. *The Dream Drugstore: Chemically Altered States of Consciousness*. Cambridge, MA: MIT Press, p.77.

5 Damasio, Antonio. 1994. *Descartes' Error: Emotion, Reason and the Human Brain*. London: Papermac, Macmillan General Books, pp.88 – 95, 226 – 230.

Auto, *Crack*, *Slimework* and the Seven Leg Spider

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Introduction

Our work explores the crossover between electronic dance music, noise, improvisation and visual arts. We use unpredictable systems as a starting point for improvisation. These systems include, for example, the Cymatic Controller (a DIY mechanical wave driver that vibrates conductive material across a 'prepared' Chladni plate);[1] the Automaticiser (a copper plate etching that doubles as a touch controller); and the PD patch, Seven Leg Spider (a performance tool that acts as a nexus between digital and analogue domains).[2] The design of these systems exploits the use of the subconscious, and complex unpredictable occurrences found in natural phenomena. We are also interested in the symbiotic relationship between sound, image, found art and sculpture, and the potential of hybrid systems. In performance we use large screen projections to show the synaesthetic connection between the systems, objects and sound. *Auto*, *Crack*, and *Slimework* are the title of three works that were created using the systems described in this paper, and these works formed the starting point for our ongoing collaboration.[3]

Cymatic controller

Since Hans Jenny's thorough research into the study of wave phenomena, many artists have found inspiration from cymatics.[4] For example, the use of cymatics can be found in Alvin Lucier's *Queen of the South*, and in the more recent work *Milch* by Carsten Nicolai. The Cymatic Controller goes a step further in that, as well as providing a visual representation of sound, sound waves are also used to move conductive non-Newtonian fluids across a circuit to control other electronic sound generating devices. The controller is driven by sounds from the PD patch the Seven Leg Spider. The idea behind using such a controller was to explore the intersection between visual and aural representation of sound, the sculptural properties of the 'object', and to create new interactive environments through the synthesis of old and new technologies. The Cymatic Controller is designed around a do-it-yourself aesthetic and is made from found and appropriated objects. These included an old loudspeaker and a small cooking mould that connects the drive arm of the controller to the coil (Figure 1).

The plate is prepared by hand-painting a circuit in silver-loaded electrically conductive paint on transparent acetate sheet. The sheet sits on a Chladni plate. The design of the circuit is based on hairline fractures found in cement (Figure 1). The pattern from these fractures is interpreted as a 'circuit' with breaks inserted. Six independent 'tracks' are realised from the labyrinth of cracks. Each track terminates at the centre of the Chladni plate, where a flange with terminal pins connects the circuit to a DIY resistance matrix. The tracks can be patched in pairs and configured to create three independent resistance values when conductive material 'connects' the tracks. These values may also be combined to create resistances in parallel or series.

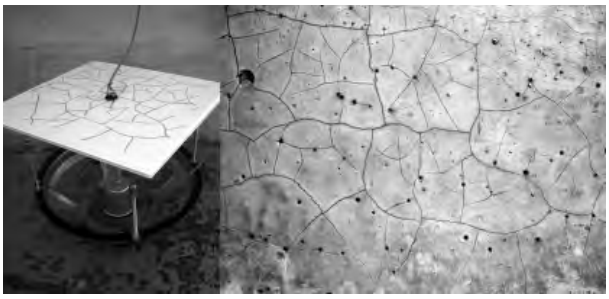

Figure 1: Cymatic Controller showing the prepared Chladni plate and circuit based on the hairline fractures found in cement.

Slimework

Slime as a conductive substance seemed particularly evocative and visceral, yet at the same time futuristic and the embodiment of the sci-fi. These ideas are

manifested in the 1968 science fiction film 'The Green Slime'. The film's trailer begins with the narration:

> The lonely helpless Earth. The twenty-first century. The world of the future. And lurking beyond the cold strange immensity of conquered space, growing and spreading beyond the warped imagination of the greatest human intellect, exploding in unthinkable horror, the green slime. [5]

There are a number of other sound artists interested in the potential of slime-like material as a variable resistor in conjunction with electronic circuits. Lorin Edwin Parker has explored using conductive jelly as a means to interact with electronic circuits;[6] whilst Eric Singer has developed the slime-o-tron to work with the LEMUR system. The conductive slime for the use with the Cymatic Controller was made from coloured gelatine and salt. Other non-Newtonian liquids, such as a composite of PVA glue and borax, have also been used. Non-Newtonian liquids have particularly unusual behaviour when subject to vibration. Different viscosity of the mixtures was also explored to alter how the slime responded to the signals sent from the Seven Leg Spider patch. Other themes associated with the slime and the Cymatic Controller include that of Prometheus. It is as if the vibrations from the controller bring life to the inanimate slime. Although the slime is not touched in performance, it has a tactile quality: something that is 'dared' to be touched, wet, gooey, viscous, and malleable.

Seven Leg Spider

The Seven Leg Spider is a patch written in Miller Puckette's Pure Data (PD) programming language. It has three principle roles in the creation of the pieces presented here. Firstly it acts as a 'stimulator' for the slime — pulses and tones of varying frequency and duration are sent to the Cymatic Controller to force the slime into motion. Secondly it acts as a 'conduit' - continuously capturing the audio signals generated by the behaviour of the circuits for use both as controller information and as a direct sound source. Thirdly it acts as an instrument in its own right — providing a rhythmic and atmospheric context for each piece, with selected parameters modifiable by the output from the Automaticiser and Cymatic Controller.

In performance the patch can be left to its own devices, stimulating and processing the Automaticiser and Cymatic Controller with pre-prepared algorithms. In practice more rewarding results are obtained when improvising with a combination of hands-on control of the patch and automatic processing. In this way the spontaneous magic of events generated via chance and the unconscious are harnessed to actively steer, inspire and disrupt.

Conclusion

We are interested in looking beyond 'black box' technology. This involves 'unpacking' the boxes and demystifying technology and making it tangible. Central to our work are the physical and biological properties of things — things that grow, decay or die — and how these 'conditions' live side-by-side with digital technology.

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1 The Chladni plate, named after Ernst Chladni, is a vibrating metal plate with lightweight particles, such as sand or salt, on its surface to show the lines of nodes.

2 Automaticer and the Cymatic Controller were developed by Richards; the Seven Leg Spider PD patch was developed by Wright. The Automaticer is discussed in detail in: Richards, John. 2008. "Getting the Hands Dirty." Pending publication in *Leonardo Music Journal* 18 (1).

3 Tim Wright and John Richards are currently working together under the name Seven Leg Spider (sls) <http://www.timwrightmusic.com/sls>

4 Jenny, Hans. 1967. Kymatik. *Wellen und Schwingungen mit ihrer Struktur und Dynamik. Cymatics. The structure and dynamics of waves and vibrations.* Basel: Basilius Presse. [Auslieferung: Karger Libri, Basel].

5 Fukasuku, Kinji. 1968. The Green Slime (trailer).

6 Parker, Lorin Edwin. Workshop entitled "New Instrument Interfaces." Presented at Velaslavasay Panorama, Bent Festival, Los Angeles, 14 April. 2007

7 LEMUR < http://www.lemurbots.org>

»SMARTJECT«
Creative Delineation Practices of Human-Mediated Self Organization in Polylogic-Cooperative Cultures of Interactivity

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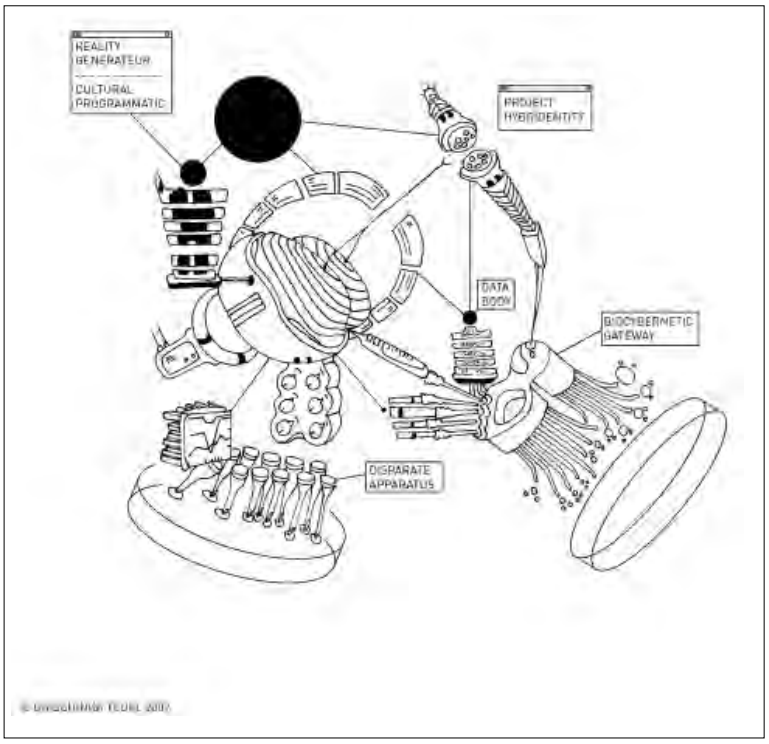

Abstract

The theory-model "Smartject" describes a new global type of human individuality, emerging through media- and communication technologies, net-mediated space, instantaneous information-streams and pervasive digital infrastructures. By adding the prefix "smart" to the suffixes of subject, object and project, the term "Smartject" describes a new way of human knowledge-transformation by modeling the complexity of today's media realities with smart and adaptive ability-profiles of individual self organization. This article is based on the research for my dissertation-thesis about creative delineation-processes in proto-social and proto-cultural fields of digital-media related art, media-theory and media-production in Europe, Japan and the USA. Within this short outline I want to point out some theoretical threats about near future-previews of media cultures and "Networked Societies" (Castells, 2001). Triggered by communication- and media specific reality-shifts, new forms of "Cultural Programs" (Schmidt, 2003) have been created and established within a paradigm of digitally-networked and "vireal" (virtual/real) locative dispositions. In this case artistic projects and communities often play a key role as early adopting "Prototopes" and experimental test-environments within cultural development. The parameters can be observed through communication-based interdependencies between environmental-, artifact- and participant-structures. Under the perspective of liquefied, informational and dissipative net-virtualities, traditional "subject/object distinctions" are no longer arbitrative for the maintenance of communication processes. They rather (re-) assemble formations of human and non-human counterparts and thereby configure an exclusive internal-/external-relationship. These progressive movements are shifting the forms of human

cooperation and transforming the vectors of creative development. Hereby the model "Smartject" is specified through multiple individual ability-profiles and project-identities, under the conditions of information- and media technological transformations. Above all, these transformations are concerning the informational and social connectivities and commitments of humankind. This requirements are forcing endurable creative self-transformations of individuals and organizations within the rising complexity-fields of media environments. Within this vectors the type of the "creative" is more and more applied in cultural industries, knowledge work, self-design, etc. and increasingly is becoming a major role model for post-contemporary development-structures.

Notes on creative delineation practices of human-mediated self organization

Within the concept of networked societies human-mediated self-design is based on a hybrid form of media-integrated self architecture, applied by the bias of "project-identities" (cp. Flusser, 1989). Within the framework of innovation-fields and latest cultural technologies, these project-dispositions are not fully formalized on a large scale and for this reason they can be labeled as "Protojects". This is the moment when theory-designers and artists, for example from the field of "Media Art", "Interactive Art", "Device Art" (Kusahara, 2004), create important testdrives for developing socio-technological sets, interaction-scenarios and experimental architecture. They design abstract concepts, materials and appliances, and if successful, they bridge the gap between expert-systems and mass usage. By this means they are also able to attract interests of economical models. Talking about geospatial networks Mike Lieberman from the "Institute for the Future" (http://www.iftf.org) puts it like this:

> *"Geohackers, Locative Media Artists, and Psychogeographers, as key players in constructing the 'geospatial web', in which the web becomes tagged with geospatial information, a development which is having enormous unharvested business opportunities."*[i]

Under the agenda of rising "creative classes" (cp. Florida, 2002) also governmental institutions and funding-systems are getting eager to push entrepreneurs in the field of media- and sociotechnological development. This often leads to thin innovation within bubble-ideologies, containing no long term perspective. For contributing individuals and groups, these settlements lead to an information-quantity which has to be compensated with hyperflexible information-modelization and cooperation-intelligence, evocating specialized "Communities of Projects" (Faßler, 2006). To establish a proper analysis of this creativity- and organization-complexes, we have to take a closer look at the general (re-)configuration of individualized and collectivized media-habitats and -habits. These media-environments are not anymore depending on several workgroups or taskforces, they are getting the main-structures of human self-organization and cultural practices of our times. Like Malcolm McCullough mentioned, "*computing not computers will characterize the next era of the computer age*" (McCullough, 2004). The question is how these complex options of "computing" are shaping adequate, coordinative and cognitive patterns of recognition and which degree of reliability will be reached by these shifts? Within this certain interaction-level we are developing extensive linked sociotechnological fields, which are forcing the intersection of environment-, actor- and architect-configurations. One major aspect of these transformations is the growing mobility of users, devices and their permanent relatedness to digital infrastructures. Thereby humans can be accompanied by their media-dispositions, acting in semi-personalized information-architectures via externalized semi-automated, semi-intelligent and multisensoric reference-systems.

Notes on polylogic-cooperative cultures of interactivity

Within the parameters of networked places filled with networked objects, accessibility is bcoming an important issue of participation. This reality-model has nothing to do with the basic idea of virtual reality anymore, it is a mediated, multisensoric and heterofactorial understanding of "in-formated" environments, which can be experienced via media- and communication-technological prosthesis. Under this condition of converging realities, human abilities like media-literacy, complexity-sensibility, playfulness, hackability and error-friendly behavior are getting important features to address adaptable communi-cations. The human being has to be understood as an multilayered entity, which is deeply linked with its environmental making and cannot be described without its informational and communicational exospheres. Thereby we have to be sensible for the interaction-contexts, developed by ubiquitous and pervasive media realities and media cultures. We have to look at the technological and at the social scale together, to create "mindfulness" within this system of communication. John Thackara puts it like this:

> *"The creation of interesting social alternatives has to be as exiting and engaging as the buzz of new technology used to be."* (Thackara, 2005)

The actual situation is more likely showing another reality. Developers, conceptualists, technicians, coders, engineers and designers, who are creating new solutions outside of big companies, have to work under the idealistic conditions of an artist, in short- and medium-term timeframes, on several projects at once, to make their living and empower their own ideas at the same time. A lot of innovative development is happening on this microlevel of production without being recognized by the global players of informationalism so far. The emergence of these projectbased cooperations, within special interest communities, is one example for the "Prototopes" of the "Smartject". It is organized in "Smart Populations" (Faßler, 2006) and is carrying high-skilled knowledge about the creation of new socio-technological connectivity-options. By living the formula of a "Hacker",[2] the "Smartject" is designing new ideologies and infrastructures. By modding the limitations of technological and cultural restriction within projectbased cooperation, the "Smartject" is establishing a lifeform which is more likely a counter-model of dromologic innovation-business.

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1 Mark Tuters, Kazys Varnelise. 2006. Beyond locative Media. Available at: http://networkedpublics.org/locative_media/beyond_locative_media (accessed: 29th of April 2008)

2 Like Robert Bickford stated 1986: *"A Hacker is any person who derives joy from discovering ways to circumvent limitations."* (cp.: http://docs.rinet.ru/ITricks/tig01.htm, accessed: 29th of April 2008)

Encompassing the Body: Wearable Technology vs. the Avatar

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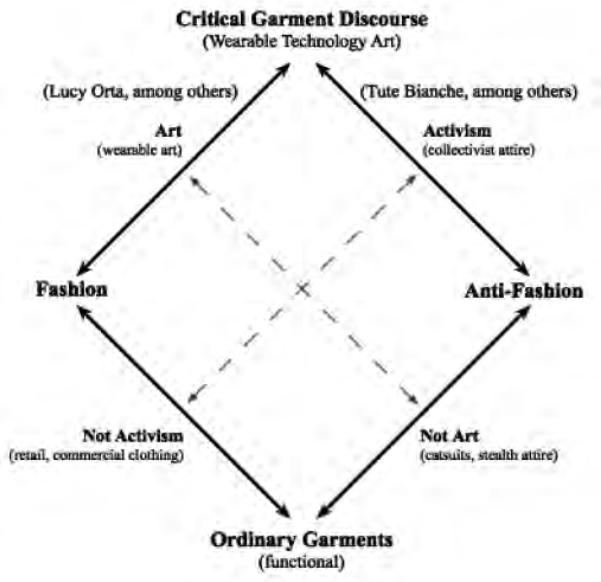
Getting dressed is the most creative activity many of us pursue throughout our lives. Learning to dress in infancy provides primary experiences of color, shape, and symbolism in relation to our own bodies. Dressing has always been a hybrid, multi-determined, and socially embedded practice, but it now takes place within ever more technologically mediated cultural fields. Few studies have been made concerning the phenomenology of dressing, but studies of technology and embodiment abound. I will draw upon the latter and touch upon two manifestations of dressing in our high-tech times: wearable technology art (WTA) and virtual self phenomena — avatars.

Elsewhere I have discussed the aesthetic and conceptual dimensions of dressing and its potential to stage discourse in the social sphere. I offered a diagram that plots variations in dress's expressive formations.[1] It was inspired by Gilles Lipovetsky's notion of "fashion" (I call dressing) as a manifestation of media and information, and an essential toolset for individuals in postmodern societies.[2] The upper part of the diagram represents wearable interventionist practices I call Critical Garment Discourse and it is there that WTA can be located.



Garment Discourse in the Cultural Field

The diagram underscores the processual nature of dress in accordance with recent theories of selfhood. Numerous authors have portrayed postmodern subjectivity as an ongoing action along the lines of Deleuze and Guattari's concept of Nomadology, the deterritorializing and reterritorializing cycle of the body-without-organs engaged in multiple social entanglements and lines of flight (1987).[3] Self as process is immersed in fluidic notions of society, as in the writings of Bruno Latour.[4] As digital technology has inspired active notions of embodiment, it has also inspired wearables that perform the embodied powers and frailties of bodies on the run.

Although rarely evaluated critically, WTA has flourished since the 1990s. It springs from the emergence of cyberfeminism, the expansion of mobile media, and the popularization of dressing energized by DIY, indie culture, and mainstream media (e.g., "Project Runway"). Research at centers like the MIT Media Lab and Hexagram increasingly considers the mobile embodied interface as an aesthetic and critical, not just a potentially commercial, format. In all, artists exploring WTA are gaining visibility, evidenced by increasing exhibitions and runway events focusing on this work, including my own *Social Fabrics*, held in Dallas last February.[5]

WTA, beyond being worn on the body, is distinguished by the complication of interfaces, including the insistent, unpredictable oscillations between mind/body, organic/inorganic material, and interiority/display. WTA, like all mobile media, occupies what Adriana de Souza e Silva calls "hybrid spaces . . . created by the merging of borders between physical and digital spaces."[6] Dressing with technologically conceptualized attire is experienced at once representationally, phenomenologically, virtually, collectively, and ephemerally. The aesthetic deployment of WTA heightens our abilities to comprehend our existence in a social world transformed by digital relations. Such work moves us beyond the cognitive numbing that ordinarily obscures our awareness of garments as embodied discourse.

Figure 1: Suzi Webster, *Electric Skin*, 2006, Illumin8 printed LEDs, silk,sensors, breath, electricity.

The expanding array of WTA works externalize phenomenological experiences of body and dress via imaginative design. For example, Berzowska's and Mainestone's performative garments entitled *Skorpions* underscore the unpredictable nature of garments that move, open, or change independently of our will. *Taiknam Hat* by Kurbak, Nascimento, and Shizue performs a kind of aviary horripilation in response, not to danger, but to EMF waves, alerting us to unseen digital forces. And Webster's *Electric Skin* garment+headpiece illuminates in response to breathing, externalizing the interior, and bathing the wearer in pulsating blue light (Figure 1).

As WTA has emerged, virtual self phenomena within online virtual environments, which depend on expressive avatar appearance and attire, have soared. But, is the experience of dressing avatars like dressing in real life? Lev Manovich has suggested that Roland Barthes' famous semiological "fashion system" is essentially the intersection of database and narrative.[7] In worlds like *Second Life*, that intersection is articulated in the renewable task of appearance building — virtual dressing as always becoming, via inventories and algorithms.

Are avatars unstable self portraits? Or, are they like the picture of Dorian Gray, an image of ourselves that acts on us, altering our existence? Gray's picture recalls the Lacanian Mirror Ego in reverse: rather than assembling a perceived body-in-fragments (as the Lacanian model does), it disassembles it (the picture's aging/disintegration), and, while preserving its subject's real appearance, it creates a social monster. In fact, in clinical research on human-avatar interaction, Nick Yee has demonstrated how our real life behavior is affected by our online self-representations.[8] He calls this the Proteus Effect, but it echoes broad-based belief that what happens inworld doesn't stay inworld. As yet Yee cannot isolate clothing from overall avatar appearance in his experiments.[9] And it may be that avatar wearables encompass the wealth of alterable, fragmented, and mutable aspects of appearance, from tattoos to tailoring. What is of the body and what is on it is a fictional distinction in virtual life.

Lipovetsky argued that in the age of information media, "the logic of appearances has moved from dress to the body."[10] Is dressing now a process that imbricates the virtual and the physical, an example of how embodiment and its aspects may operate as mediation itself? Bernadette Wegenstein calls this the "*corporealization of the image*": "Far from witnessing a gradual disembodiment of information and images," she argues, "the age of new media constitutes the current moment in a process of embodiment or corporealization."[11] This process might also explain the current interest in technological wearables, both online and off.

Figure 2: Irena Morris (Eshi Otawara), *Imperial Lotus Dress for Second Life*, 2008.

At present, most avatar appearance replicates stereotypical ideals circulating in the mass media. There is a burgeoning avatar aesthetic that borders on what I call garment discourse; for example the expansive gowns of Irena Morris (Eshi Otawara) demonstrate the questionable solidity of virtual ground (Figure 2). But I find self-awareness of appearance (the critical nature of dressing) still lacking in virtual worlds. Fashion theorists like Joanne Entwistle argue that the dressed body is a situated practice because it is experienced in motion, within high-risk social environments. Yet, as virtual phenomena grow in importance and complexity, virtual environments are becoming as high-risk as physical ones, and contributions to the discourse of wearables (or "be-ables") will no doubt increase as well.

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1 Diagram inspired by Krauss, Rosalind. 1979. "Sculpture in the Expanded Field." In *October* 8. Cambridge, MA: MIT Press, pp. 30-44.

2 Lipovetsky, Gilles. 1994. *The Empire of Fashion: Dressing Modern Democracy.* Translated by Catherine Porter. Princeton: Princeton University Press, pp. 3-12.

3 Deleuze, Gilles, and Guattari, Felix. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia.* Translated by Brian Massumi. Minneapolis: University of Minnesota Press.

4 Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network Theory.* Oxford: Oxford University Press.

5 The event, co-curated by Patrick Lichty, took place at the 2008 CAA Annual Meeting in Dallas, Texas, sponsored by the Leonardo Education Forum. Catalog forthcoming at http://www.intelligentagent.com.

6 De Souza e Silva, Adriana. 2006. "From Cyber to Hybrid: Mobile Technologies as Interfaces of Hybrid Spaces." In *Space and Culture* 9. Thousand Oaks, California: Sage Publications, p. 265.

7 Manovich, Lev. 2001. *The Language of New Media.* Cambridge, MA: MIT Press, p. 230.

8 Yee, Nick. "The Proteus Effect: The Effect of Transformed Self-Representation on Behavior." Accessed 19 April 2008 from http://www.nickyee.com/.

9 Yee, Nick, email to author, 8 April 2008.

10 Lipovetsky, p. 244.

11 Wegenstein, Bernadette. 2006. *Getting Under the Skin: The Body and Media Theory.* Cambridge, MA: MIT Press, p. 147.

12 Enwistle, Joanne. 2001. "The Dressed Body." In *Body Dressing,* edited by Joanne Entwistle and Elizabeth Wilson. Oxford: Berg, pp. 33-58.

From Traditional to Virtual Interactive Puppetry: A Comprehensive Approach

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Puppetry is one of the most ancient forms of performance in the world. Even though it was universally popular in the past, most of traditional puppet theatres have lost their appeal and their vital communication with communities. In ancient times, puppetry played an important role as village "ritual", as shown in many world puppetries. There is clear evidence of how ritual objects such as masks have been transformed into puppets throughout time, showing the inherent connection between ritual and puppetry[1]. As an example, Wayang Kulit, Indonesian shadow puppetry, is one of the most ancient forms of puppetry, storytelling, and ritual[2]. The shadows are considered spirits of the deceased, in keeping with the traditional Javanese animistic belief that everything had a soul.[3] Wayang Kulit functions as a ritual for calling spirits in order to ask for advice or help in overcoming problems related to disharmony, and to bring balance between positive and negative forces of the community.[4] In this ritualistic context, the puppeteer played the role of shaman, entering into a transformative relationship with his ritual object, the "puppet". This has later resulted in forms of freely improvised storytelling and of lively interaction with the public in the community. As in Wayang Kulit, we define the puppet as a source of energy continuously sending users into altered states of consciousness, breaking constraints, and boundaries of the material world. However, the word "puppet" frequently appears in the digital realm to indicate a form of Avatar, being mainly manifested as a representation of the materialism of real world. Deeply rooted in the Cartesian hierarchy of separation between subject and object, in the digital media culture a puppet is considered as something to be manipulated and controlled, ignoring its transformative relationship with the user. In the digital translation of puppetry, we are interested in how interactive technology will support ancient wisdoms of ritual, revealing transformative relationships of puppet and puppeteer, resulting in performances of great excitement, public engagement and reflection of the community, creating rich layers of mixed reality environments. In fact, Wayang Kulit offers complicated layers of mixed reality, which allows viewers to walk

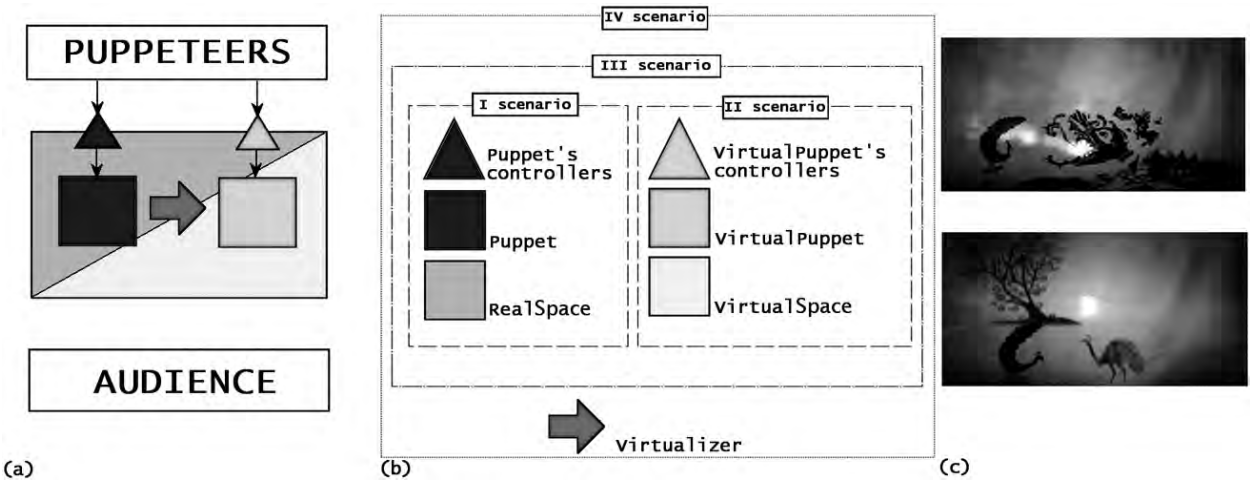

Figure 1: Diagram of the four scenarios and pictures from "Experimental Virtual Wayang" performance.

around the screen, watching the real puppet and its virtual form as a shadow at the same time. Mixed reality does not only happen in viewer/puppeteer's consciousness at the moment the shadow becomes alive with its own spirit, but also in the viewer's perception struggling between real and virtual forms of presentation, walking around the screen. This kind of setting creates rich platforms for discussing reality, virtuality and mixed reality all together, which we adopt as our methodology in order to explore the full potential of virtual puppetry.

Methodology

A virtual interactive puppetry project has started with sound-activated puppets in "Yong-Shin-Gud", addressing spiraling ways of interaction between puppet and puppeteer.[5] Technical research on Virtual sensors and distributed networks in the Multimedia Lab of the University of Rome has been incorporated with the projects "Copuppet" and "Experimental Virtual Wayang."[6] The following section shows our methodology to reveal the full potential of puppetry in complex layers of mixed reality (see Figure 1).

1. Traditional puppetry — *Mixed reality: real puppet and viewer's consciousness*
   Traditional puppetry uses diverse techniques such as fingers, hands, rods and sticks, with beautiful traditions of world puppetry, such as Wayang Kulit, Punch & Judy, Koktoo Gaksi, and Bunraku. In traditional settings, puppeteers drive puppets acting on physical Controllers on the real space where puppets are presented. We investigate how traditional techniques have supported transformative relationships between puppet and puppeteer. Diverse forms of world puppetry traditions should be investigated in ths setting.

2. Virtual puppetry — *Mixed reality: virtual puppet and viewer's consciousness*
   Virtual puppetry uses digital technology to set up novel relationships between puppet and puppeteer. It could employ single or multiple user interfaces, as shown in previous projects "Yong-Shin-Gud" and "CoPuppet". The CoPuppet project explored collaborative interaction in virtual puppetry among multiple users over the network, using VirtualSensors technology.[7] A set of VirtualSensors was used as a controller to drive the posture of a Virtual Wayang Dragon. A set of three VirtualSliders is used to detect cue points from video captured puppeteer's hand gestures. These cue points are then mapped to parameters defining the dragon tail posture. VirtualPuppets are presented on their VirtualSpace, i.e. the transposition of the digital puppet to the real space.

3. Combination of Traditional and Virtual puppetry — *Mixed reality: real puppet, virtual puppet and viewer's consciousness*
   The third scenario proposes the combination of traditional and virtual puppetry. Such a mixed environment gives us better understanding on both traditional and digital mechanisms, in terms of user interaction, usability, subject/object relationship, dimensionality, and storytelling. As an example, "Experimental Virtual Wayang" is a contemporary translation of the traditional Balinese (Indonesia) shadow puppet performance ("Wayang Kulit"), featuring virtual interactive puppets and a real-time background drawing system, bringing the spirit of live improvisation into storytelling (Figure 1.c).[8] The shadow puppet master is able to simultaneously manipulate traditional puppets as well as virtual ones fitted with infrared units monitored by a motion

and position detection system. The virtual puppet is projected on the same on which traditional shadow puppets are displayed. The shadow master changes the look of the virtual puppet and its movements according to his actions and voice. This project opens the interactive system to the public, inviting people to draw background images, interacting with puppeteer. In this setting, puppeteers drive physical puppets via puppet's controllers and virtual ones via VirtualPuppet's controllers. VirtualPuppets are presented on their VirtualSpace, while the real space is augmented with transpositions of the VirtualSpace.

4. Re-combination of Traditional and Virtual puppetry — *Mixed reality: real, virtual, realized and virtualized puppets and viewer's consciousness*
   The fourth scenario proposes the re-combination of Traditional and Virtual puppetry where real puppets are virtualized or virtual puppets are realized. We detect the real puppet's position and shape by a virtualizer and reconstruct data into the form of virtual puppet, space or collision detection between real and virtual. This setting will create complicated mixed reality environments, by projecting virtual components on top of real puppets and vice versa. Mixed reality aspects can regard the puppet itself, or the relationships between puppets, between viewers and puppets, or all together. The detected relationship between Virtual and Real Puppets will create complicated layers of mixed reality, which will bring forth new potential of puppetry in digital era. In conclusion, our approach aims at creating rich platform for continuous discussions, not only about puppetry, but also about fundamental issues of digital media, such as human/computer relationship, virtuality, mixed reality and interactivity. Virtual Interactive puppetry will be explored, continuously challenging technical, conceptual and philosophical layers in order to create playful experience of users situated in complex layers of mixed reality environments.

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Charmed

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Introduction

This paper introduces *Charmed*, an interactive media artwork created by Gavin Sade, Priscilla Bracks and Matthew Dwyer, that enables audiences to influence an entire world and all who live within it, whilst simultaneously raising ideas about the exercise of our own free will, and the spaces, relationships and activities that mark our daily life.

Charmed was created with the support of an Experimenta New Visions Commission, and first exhibited in Experimenta Playground: International Biennial of Media Arts, at Melbourne's Arts Centre to an audience of approximately 44,000 people between the 25 August and 23 September 2007.

Charmed

The work was developed in response to the Experimenta New Visions Commission call for proposals inviting artists to:

> "create works that allow the audience to play, and be played upon… The experience for the audience may be surprising, delightful, horrifying, repulsive, funny, challenging, perplexing, uncanny, nostalgic, or disarming." [1]

These themes inspired us to make an animated adaptation of images from *Refugee from the Human State*[2] — a series of illustrations by Priscilla Bracks. In doing so

A group of people using *Charmed at Experimenta Playground* Melbourne 2007.
Bracks, Sade & Dwyer, Charmed (2007).
Courtesy of Experimenta. Photo by Andrew Lloyd.

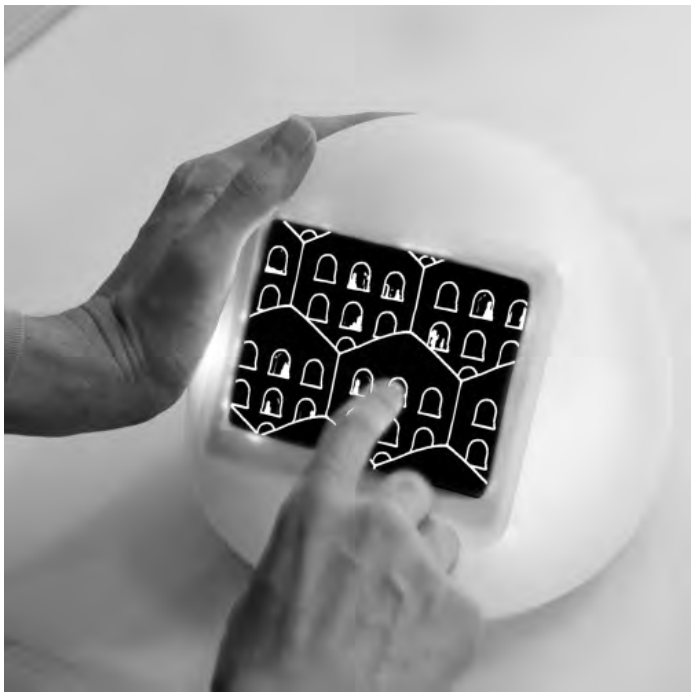
we gave careful consideration to how audiences could explore the ideas captured in the illustrations, through a playful interface that brings the animated scenes to life through interaction and sound.

The original illustrations use a visual aesthetic characterized by simple, white, line drawings on watery, black, painted backgrounds depict scenes from everyday life in large, urban environments and developed landscapes: apartment blocks, traffic jams, open plan office spaces, sprawling suburbia, plantation pine forests, and towering corporate office blocks. The visual aesthetic of the original illustrations has been maintained in the interactive work.

Charmed is experienced by way of a uniquely playful, ludic interface that moves away from typical static-screen presentation formats by integrating the interface within movable sculptural objects — three glowing resin pods containing touch-sensitive screens, Light Emitting Diodes - LEDs, and custom electronics.

At a distance, the pods' white, sleek and minimalist design, not only evokes Kubrick's vision of the future in *2001, A Space Odyssey*, but also reflects contemporary 'blobjects' - a portmanteau of 'blobby' and 'object', which Sterling attributes the fluid curvilinear form of blobjects to the design and manufacturing process.[3] Despite this appearance, closer inspection reveals that the pods are actually handcrafted objects, and not the result of computer controlled design and manufacturing processes. Each pod is slightly different, with variations in the illumination of the surface, differing patterns of air bubbles in the polyurethane around the base, and subtle differences in the shape that can be felt as each pod is touched and held.

Each pod presents different scenes in the virtual world, which are explored by sliding the pods across the opal acrylic surface of a custom-built ply-wood cabinet housing computers, video tracking equipment and peripherals. The video-tracking device monitors the pods' movement, creating seamless transitions through various scenes in the *Charmed* landscape. These scenes consist of haptic visual environments - visual spaces that do not employ linear perspective in a consistent manner — where depth perception and movement through space is coupled to pod movement. One pod — *The City Pod* — contains 3 scenes depicting city high-rise buildings, open plan office spaces and peak-hour traffic. Another — *The Suburbs Pod* — features suburbs, forests, homes and cars. The third pod — *The Apartments* — contains



Detailed image of the Apartment scene. Sade, Bracks & Dwyer, Charmed (2007). Photo: Priscilla Bracks.

just one scene, a honeycomb hive-like apartment block extending in every direction the pod can move. In this scene, audiences voyeuristically gaze into the lives of the tiny people who inhabit the virtual world and effect the apartment tenants' behaviour via the touch-screen interfaces.

The interactive experience

In *Charmed*, audiences are required to physically engage with the pods, by touching the screens and moving the pods around the table. The result is a playful interface that requires the audience to engage in a more physical experience than is usually offered by passive viewing modes. This draws attention to the objects themselves — the pods — which mirror a dominant visual motif — a dome shape — employed throughout the original illustrations and the *Charmed* animations, appearing as cars, apartment windows, and houses.

The focus of the interaction design was on maintaining a sense of revelation, by linking exploration of the virtual world by moving the pods through real space. This approach is similar in nature to augmented reality, where digital objects are registered over a view of the real world. This technique was employed to escape the common trope of hand-held computer games, where the worlds are contained 'within' the object. Instead we aimed to design a work where the virtual world appeared to exist in the empty volume of space around the pods, giving an impression that the pods themselves provide a window through which this world can be seen. This reinforces the idea that the *Charmed* world is not entirely mythical or virtual, but rather exists all around us in the urban spaces we create and the way we live our daily lives.

Beyond movement of the pods, the touch screen in each pod enables simple playful interactions, providing immediate visual and auditory responses. Like giants, users can touch the screens to effect change in each scene, unsettling characters in their apartments, causing cars to crash, exploding computers in an open plan office, cutting down trees, and building suburbs.

The distribution of the scenes between three pods means that in order to explore all of the scenes in the *Charmed* world, users have to touch and move all three of the pods. This may result in a user circumnavigating the table multiple times. This design means *Charmed* is accessible to both individuals and groups. At any one time, up to three people can interact with the work directly, while a larger number can join in the experience by observing the interaction. When several people are using the work, they very often engage with each other to exchange pods, to move around each other as they explore each scene, or even touch the same screen.

Conclusion

Charmed demonstrates that it is possible to create playful interactive experiences that diverge from the established tropes of entertainment media, and still successfully engage with a wide audience. Likewise, it confirms that it is possible to create custom objects and interfaces that are highly tactile, engaging and robust, and suitable for large-scale media arts exhibitions.

Finally, *Charmed* requires one to place both hands on one of the pods, feeling the texture and warmth of the surface, while sliding the pod across the surface of the table and bumping into another audience member as you make your way around the table exploring each of the scenes. It is the unexpected and serendipitous interactions that occur when interacting with *Charmed* that make it a unique work that is playful yet, at the same time opens space for contemplation about the worlds (real and imaginary) in which we dwell.

Production credits

Charmed was produced by the following people:

- Gavin Sade (Original concept, sound design, technical direction, programming)
- Priscilla Bracks (Original concept, animation, and visual design)
- Matt Dwyer (Concept development and sculpting)
- Matt Petoe (Electronics design and engineering)
- Glenn Wetherall (Programming, animation sequencing and media wrangling)
- Richard Vaughan (Cabinetry)

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1 Extract from Experiementa Media Arts New Visions Commission call for proposals 2006.

2 *The Refugee from the Human State* series of images can be viewed at http://priscillabracks.com/refugee_from_the_human_state/

3 Sterling, B. 2004. Viridian Note 00422: The Spime." Retrieved 17/01/05, 2005, from http://www.viridiandesign.org/notes/401-450/00422_the_spime.html.

Light Attack — Media Art and the 'Moving Moving' Image as an Intervention in Public Spaces

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An interdependent relationship between media artists, architects, and designers has emerged in recent years as a new creative practice in the urban context, with significant cultural and creative potential. This practice, often referred to as media architecture or 'mediatecture',[1] 'responsive environments'[2], 'urban screens'[3], '4d spaces'[4], or 'soft spaces'[5], has developed during the 1980s and has now become a working model for various architecture and new media collectives predominantly located in Europe and the United States.[6] The presentation at ISEA 08 addresses site-specificity in the context of urban screens. The site as inspiration, material, and critical venue has been increasingly contested since the 1960s. Public Art and Percent for Art programs like the GSA[7] and NEA[8] have defined and redefined their agendas to specifically accommodate site-specific approaches towards art making and reception, actively shaping contemporary public art practice. Especially for practitioners in the emerging field of media architecture, the lessons learned from site-specific public art, their legislative aspects, and their influence on art making and reception should be of genuine interest, as it operates in the same physical and ideological space: the fragmented public sphere.[9]

The terms 'mediatecure', 'responsive environments', and 'soft spaces' imply a kinetic or time-based component within architecture, in practice often realized with a digital layer of programmable light, directly augmented on building, using projection of LED technology. In the urban context, 'soft spaces' present anything and everything, including news, cinema, products, and passers-by, simultaneously as celebration and critique of contemporary media society. Diverse interfaces, such as cameras, sensors, cell phones, RFID[10] allow for real-time interaction, with the premise to stimulate identification with a specific site or building. Contrariwise, tactical media as approach that temporarily appropriates mass media (i.e. through hit-and-run tactics and culture jamming) and the architecture of urban spaces, represents an alternative cultural platform for artists, located outside the 'dedicated' channels of mainstream and mass media.

As Miwon Know describes in her book *One Place After Another: Site-Specific Art and Locational Identity*[11], site-specific art has shifted since the 1960s from a) phenomenological aspects of the site, such as scale, topographical, and architectural features to b) social, cultural, and institutional critique, and later to c) discursive practices that employ social, economic and political processes into the creation and utilization of the artwork. This qualitative shift represents a process of 'opening up', from a focus on the gallery as space, to audience participation, and direct audience involvement into the production and completion of the work. In this shift, a simultaneous reversal takes place in regards to the role of object, audience, and institution: a) the object as institution, b) the institution as object, and c) the audience as institution.

a) Focusing on phenomenological aspects, Donald Judd's work *Floor Box*, 1969, for instance, is concerned with how the sculpture occupies a volume of space. The audience experiences the sculpture, as well as the space surrounding it, as well as their interrelations.
b) When Walter De Maria fills the Heiner Friedrich Gallery in Munich with dirt (*50 m3 Level Dirt*, 1968) and Mel Bochner markes the walls of the same space with its architectural dimensions (*Measurement: Room*, 1969), the physical condition of the space is the primary point of departure while it also addresses directly the gallery as an institution. Chris Burden targets the art institution literally in his installation *Samson* (1985), using a 100-ton jack pushing against the bearing walls connected to a turnstile at the entrance of the space, each visitor eventually causing enough pressure to potentially destroy the building.
c) Commissioned by the public art program *Culture in Action*[12], Inigo Maglano-Ovalle collaborates with members of his own Latino community to form *Street-Level Video*, a youth program, in cooperation with a local public access television station. During workshops, the artist works with the participants to create a series of videos that represent their lives and concerns. As part of the public art commission,

Maglano-Ovalle and *Street-Level Video* organized a block party (*Tele Vecindario*,1993) that included an outdoor video installation, both engaging the local community in the creation of the work, and establishing local institution that is still active today.

How do these concepts apply to artworks created in the context of media facades, and media architecture? In the example of the modern art museum Kunsthaus Graz, Austria, the distinct blob-like shape of the *BIX*[13] facade display implies the creation of video works that are predominantly derived directly from the building's shape, or, phenomenological aspects of the site (a). In her work *For The City*, 2005, Jenny Holzer projects publicly recently declassified and other sensitive United States government documents onto the Bobst Library of New York University, exploring the problem of achieving a balance between secrecy and transparency. She addresses the library both as venue and institution (b). I'd argue that there are currently no realized artworks created in the context of media facades that have fully and successfully employed a discursive approach, both in the creation of the work, the subject, and sustained effects on the local communities (c).

Light Attack[14], a media artwork and social experiment by Daniel Sauter, includes some discursive aspects. The project wishes to illuminate the condition of public life within socially and culturally diverse urban spaces. While driving through the city, an animated virtual character is projected onto the cityscape, exploring places 'to go' and places 'not to go', according to the popular Lonely Planet travel guide. *Light Attack* elaborates the concept of the 'moving moving' image – the projected moving imagery corresponds to the movement through the space while the character's behavior is influenced by the urban context and passers-by. The car's movement through the city determines the virtual character's behavior, utilizing custom computer software that arranges short pre-recorded video loops into seamless motion patterns, allowing for real-time interaction with the architecture and passers-by. Venues and routes are the result of discussions with curators and organizers, culminating in an exhibition at a local art institution, including demographic information. The piece has been performed in diverse cities and neighborhoods, including Los Angeles (USA, 2004), Florence (2005), Boston (2006), Hong Kong (2006), Seoul (2006), and Mexico City (2007).

Based on *Light Attack*, the presentation at ISEA 2008 juxtaposes selected media artworks in public spaces in regards to aforementioned 'site-specific' considerations. Video clips and images of concept proposals and realized projects from the Middle East, Europe, and Asia, will exemplify relevant technological developments in the context of media architecture.

1 Term established by ag4 Media Company, 1993.

2 Title used by Lucy Bullivant for her book: Bullivant, Lucy. 2006. *Responsive Environments*. London: V&A.

3 Term established by the homonymous conference in Amsterdam, 2005, curated by Mirjam Struppek.

4 In reference to Lucy Bullivant's book: Bullivant, Lucy. 2006. *4dsocial: Interactive Design Environments*. New York: Wiley.

5 Term introduced by Usman Haque, London.

6 Well known examples of this kind of practice: Art+Com, Berlin; ag4 media facade GmbH, Cologne; Diller Scofidio + Renfro, New York City.

7 Formation of the Art-in-Architecture Program of the General Services Administration (GSA) in 1963.

8 Formation of the Art-in-Public-Places Program of the National Endowment for the Arts (NEA) in 1967.

9 As discussed in: Warner, Michael. 2005. *Publics and Counterpublics.* New York: Zone Books.

10 Radio Frequency Identification

11 Kwon, Miwon. 2004. *One Place after Another: Site-Specific Art and Locational Identity*. Cambridge, London: The MIT Press.

12 Sponsored by the nonprofit public art organization *Sculpture Chicago*, and directed by the independent curator Mary Jane Jacob, 1991-93.

13 BIX is a permanent light and media installation for the Kunsthaus Graz, Austria, designed by Peter Cook and Colin Fournier, media façade designed by realities:united architects, Berlin.

14 Daniel Sauter: Light Attack. http://daniel-sauter.com/light_attack (accessed April 29, 2008).

Realizing the Moment:
Towards a Continued Role for Technology in Art

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In October 1966, 10,000 spectators at New York's 69th Regiment Armory witnessed the results of a landmark collaboration between ten artists and thirty engineers from Bell Telephone Laboratories (Dixon, 97). This unprecedented undertaking, ten months in the making, fused the creative vitality of New York artists with the ingenuity and technological sophistication of one of the world's premiere scientific labs, bridging the ostensible gulf between art and technology. The event, "Nine Evenings: Theater and Engineering," now known as 9 Evenings, left an indelible impression on the artists who participated and inspired many burgeoning artists in the audience.

Yet, while 9 Evenings represents a milestone in the history of artistic innovation, relatively few people were able to experience it first hand. In fact, documentation of the event was nearly lost to the pages of history until Barbro Schultz Lundestam, a Swedish filmmaker, undertook the task of reconstructing 9 Evenings in a series of films produced by Billy Klüver and Julie Martin. To date, two of ten planned videos, which document "Variations VII" by John Cage and "Open Score" by Robert Rauschenberg, have been released, assembled from a combination of original footage and interviews with the "artists, engineers and performers to illuminate the artistic, technical and historical aspects of the work." (Microcinema DVDs) These films are an important resource for any artist interested in the history of art and technology, and offer an incredibly thorough document of this pioneering event.

However, projects like this, which attempt to reconstruct the past from an array of fragmented documentation, beg an important question: to what extent can they effectively recreate the experience of the live event? While such documentaries certainly have merit as artistic projects in their own right, 9 Evenings artist Julie Martin believes we must acknowledge that watching a film about art is inherently different from experiencing it directly, and the former cannot replace the latter (personal communication, April 16, 2008). For the work of art is valuable only in so far as it is "vibrated by the reflexes of the future," (André Breton qtd. in Benjamin, 249).

A live event engages its audience in a unique way, where each member contributes to its shape, actively participating in its realization. Importantly, the artistic event implicates its audience both as individuals and as a collective, and the experience thus becomes a dialectical one. Here, audience members engage with the artists and their creations in a collective elaboration of meaning. As critic Nicholas Bourriaud notes, "Each particular artwork is a proposal to live in a shared world… intersubjectivity…becomes the quintessence of artistic practice," (Bourriaud 22). This component of a communal development of meaning is an essential aspect of the artistic experience, as "there is the possibility of an immediate discussion: I see and perceive, I comment, and I evolve in a unique space and time," (Bourriaud 16).With the diminished critical distance of direct artistic experience comes an increasing emotional involvement where the participant is immersed "in a 360-degree… unity of time and place," (Popper 181). The live event is thus a site of encounter and exploration. Each of these encounters is bound to a particular moment in history, and this context cannot be mechanically reproduced.

By contrast, the viewer takes on a much more passive role when experiencing an artistic event that has been translated into video documentation. Instead of providing a shared site of artistic communion, the video "refer[s] each individual to his or her space of private consumption," (Bourriaud 16). The viewer is excluded from the communal aspect of a live performance, and the documentary forces him or her to acknowledge his or her current context, separating the individual from the actual experience while allowing only mediated a glimpse of it. As a result, the documented version of the event lacks the dynamism of meaning one encounters when experiencing art directly. Of course art created

for presentation on the screen does not fall into this philosophical quandary.

A documentary essentially represents a predigested, one-sided interpretation of a historical circumstance different from the viewer who experienced the event. As American filmmaker Frederick Wiseman has demonstrated, film is unavoidably biased towards producing a certain interpretation of an event: each image presented is arbitrated through the critic's lens. Hence, the relationship between viewer and image is one of authoritarian promotion and reception in contrast to the more democratic communal elaboration of meaning described above (Bourriaud 24). However, art like that produced for 9 Evenings exists in time and space, and its reduction to mere image subtracts something essential from it, reducing it to a static object confined by the parameters of the viewer's screen. Bourriaud argues that artistic form can only be realized "from a meeting between two levels of reality. For [the homogeneity of a document] does not produce [art]: it produces only the visual, otherwise put, 'looped information'" (Bourriaud 24).

In order to allow an audience to participate actively in the creation of art and to broaden the compass of potential meaning, art needs to continue to be performed. However, its reperformance has been complicated by the unique challenges in interpretation and recreation posed by works that incorporate technology. For example, accurately reperforming 9 Evenings would pose a major challenge, as most of the equipment has since been relegated to junkyard heaps (J. Driscoll, Personal Communication April 20, 2008). In order to overcome such a fate, artists need to maintain the performance equipment and document their pieces as thoroughly as possible through means like circuit diagrams and descriptions of interaction. This cannot and should not replace the art itself, but artists should consider that "in music, the score, which theoretically precedes the performance, acts as a specification, with the explicit aim of guiding performances," (M. Puckette, personal communication, April 28, 2008). This type of documentation does not necessarily have to precede the performance, but it can help to ensure that the art is accurately represented in future performances.

Ultimately, performed art is ephemeral, existing in the blurry chasm between some beginning and its end. Each performance of this type of art "exists in a particular moment with particular performance gestures and capabilities that can almost be seen as a snapshot in time," (J. Driscoll, personal communication, 20 April 2008). In order to realize fully its fleeting moment, art requires an audience. But the project of reperforming art does not represent an act of static preservation or refusal to acknowledge art's place in history; rather, it allows art to continually evolve and to respond to changing historical and social contexts. To conclude with a message from Toru Takenmitsu, "The measure of the 'only performance' is the music each time it is heard, and that continues to be the measure for every performance" (Takemitsu, 48).

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NeuroMedia

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In this paper I make a number of claims which (given time) might help to situate media art inside the subject of neuroscience. The influences for these claims are derived from my own residency inside the Neurobiology Lab at the University of Zurich[1] combined with a long-term interest in designing electronic sensory interfaces for users. Firstly, from this experience I claim that there is a real need for artists to gain a deeper understanding about scientific research inside neuroscience labs, and that this can easily be made by engaging in an experiential immersive "hands on" experiments alongside the researchers themselves. Secondly, attempting to understand the complexity behind the perceptive neuro-morphology of all our sensory systems is not only inspiring but learning about it might be necessary for the future of en-active knowledge. Thirdly, the experience to engage in pertinent debates about the relation between the basic research conducted in the laboratory and humanitarian medical applications is very revealing and finally, the construction of novel metaphorical media art interpretations that can attempt to raise public awareness about sensory problems is an extremely challenging role. I call the results, the process and the future potentials of such a daring journey: *Neuromedia*.

Neuromedia promotes a trans-disciplinary venture with a number of aims. Some of these might be to generate a higher level of aesthetic and representational discourse within the scientific community itself, to open up the relations between *artists*, *clinical analyzers* and *basic researchers* in neurobiology and to create a transitional catalyst between the methodologies of science and the general public based on more scientifically robust knowledge. In relation to media art, *Neuromedia* may also have the added task of developing more responsive HCI interfaces which incorporate a clearer understanding of neural behaviour or contribute to more creative sensory technologies for the disabled or visually impaired. However, Neuromedia should not be seen as art therapy nor scientific education. Instead it should become a poetic hybrid of artistic interpretation and scientific research; a grey zone, which actually alludes to the essential components of neural behaviour of translation, contraction, adhesion, expansion and retraction embodied in the emetic analysis of vertebrate neural system development and function. In other words it should be about human response!

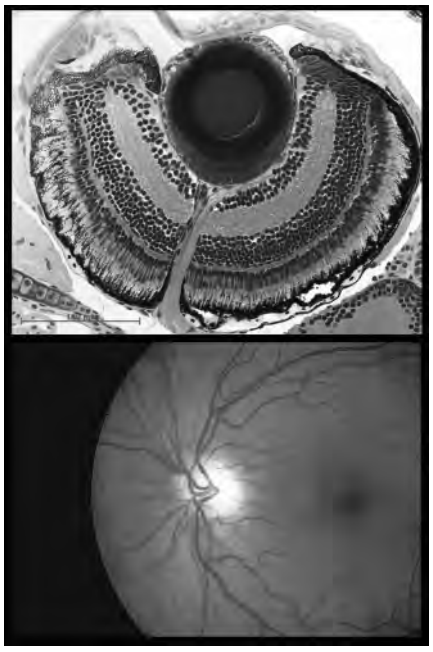
For the purpose of elucidation, three particular examples from these disciplines may be used to illustrate how *Neuromedia* can open up new discourses between *artists*, *clinical analyzers* and *basic researchers*. The representative of these groups are (1) a Swiss-based basic researcher in Neuromorphology, (2) a case study on the human eye of Glaucoma, conducted by Department of Ophthalmology, National University of Singapore, and (3) finally my own production of the media artwork entitled "The Electric Retina (2008)"

(1) Like her colleagues, Corinne Hodel is a Neurobiological researcher who wishes to gain a deeper insight into the genetic control of visual system development and function she makes all her analysis with zebra fish mutants. The zebra fish is preferred because they are diurnal animals and their photoreceptor retinal activity resembles the neurological function of the human eye. The zebra fish is popular among geneticists and embryologist for its easy maintenance, high fecundity, transparent embryos, and rapid embryological development. Since Hodel is interested in visual system performance, she is using a behavioural assay to test for vision. Therefore she breeds genetic mutants in order to understand how genetic disease is inherited, and her focus is on light adaptation of the retina- the levels of which are often affected by many diseases. Usually, she is confronted with quite a lack of understanding when she attempts to explain her research to the public.

(2) The clinical case study is related to a world survey which shows a high incidence of glaucoma in the world[2]—there are over 67 million glaucoma sufferers—and the developing countries of East Asia account for almost half of this world-estimate. This study, conducted by the Department of Ophthalmology, National University of Singapore, also concluded that incidence of glaucoma in the Chinese community of

Singapore itself is also on the increase and improved methods of screening and therapy for glaucoma are urgently needed.[3] Glaucoma is a group of diseases of the optic nerve involving loss of retinal ganglion cells in a characteristic pattern of optic neuropathy. Although raised intraocular pressure is a significant risk factor for developing glaucoma, there is no set threshold for intraocular pressure that causes glaucoma. One person may develop nerve damage at a relatively low pressure, while another person may have high eye pressures for years and yet never develop damage. Untreated glaucoma leads to permanent damage of the optic nerve and resultant visual field loss, but according to the ophthalmologists, the real problem is catch the disease early and encourage people to make tests so that the disease can be treated.

(3) "The Electric Retina" is the name of the interactive media sculpture, which was based on the visual system research and its relation to human disease. The aim of the "Electric Retina", was to produce a sculpture that could raise public awareness about the problems of genetically inherited diseases like Glaucoma. Could the sculpture demystify the complexity of neural behaviour but also remain true to a level of self-reflection often inherent in the art process. Therefore, after the unsettling experience of being diagnosed with Glaucoma myself, I also incorporated my clinical analysis (MRI scans, Visual field tests, etc) into the project. The sculpture uses a combination of tactile response and interactive film to open up three-way discourse between the researchers, the clinical analyzers and the public. The main metaphor for the tactile response for the user was inspired by the tangential cut of the photoreceptor in the retina, scanned with the researchers under the Scanning Electron Microscope (SEM). Thus the black and white nano-scale was enlarged and constructed in 3D-reality so that the rods and cones could constitute the surface of the sculpture. Using this structure as an interface, the users can trigger the content of the films, which emit from the interior pf the sculpture. In the ocular side, the viewer can trigger a set of interactive films which trace the evidence of scientific research, and on the other side, one can manipulated a set of projected films by twisting an electronic lens. These projected films interpret neural behaviour from the point of view of the mutated fish and they attempt to displays how visual impairments can affect its behaviour. Through interaction the viewers can trigger associated sets of films from scientific research, which appear in the sculptures oculars. The diseases are Genetic Deficiency, Visual Impairment (including Glaucoma), Light Adaptation and the Fish Mutants of Noir and Belladonna (Congential Nyastagmus). Typical of a media artist, I was also busy with communication questions such as: How can I represent these behavioural results and what might the mutant actually see or do? How can I demystify the complexity of visual perception so that the clinical ophthalmologists also see my interpretation as having potentials to encouraging public interest?



(top) Neural Retina of the Zebra Fish (Wild Type). University of Zurich 2008
(bottom) Human Fundus: distorted Optic Nerve Disk /Glaucoma 2008

Finally some answers to all of our questions from the different disciplines came from the exhibition of the sculpture in two contexts — the first was a popular science event called the "Brain Fair: Parcours des Wissens" in 2008[4] and the second was at the Zurich main train station. In both events, over 40,0000 people explored the Electric Retina. The scientists and I used the methodology of random video and audio interviews as analysis in order to gather the responses from the users.[5] In both cases, the scientists from the lab actually stood next to the sculpture in order to talk to the public. Many viewers commented that *Neuromedia* helped them to understand the relationship between basic research and the potentials of curing human disease. The scientists were surprised how little the public knew about eye disease and they realized that scientific research often exists in a hidden vacuum, quite a problem seeing that the public largely funds scientific research! As scientists Corinne Hodel suggested[6] the process of collaborating on a *Neuromedia* work, was beneficial to the scientists. Working alongside a media artist also revealed a different point of view about her own research and gave her the ability to see an experiment or problem from another perspective. "We received a lot of training in answering why questions from the artist and also from the public

and we all realized that media art could be a catalyst for the opening up of more discourses in the future." *Neuromedia* seemed to be a gift for the scientists, and in return I learnt a great deal about neuroscience. Certainly, the process of creating *Neuromedia* promoted unexpected discourses between these three disciplines.

In conclusion, *Neuromedia* may be a new process, which involves more than the construction of a media sculpture, it is the art of combining knowledge from neurobiology and the clinical field with interactive media and tactile en-action in situ. It attempts to allow not only the experts, but the also the general public to visualize and experience how sensory perception in is affected by genetics, disease and degeneration. It may even enlarge the knowledge of afferent and efferent systems of neural cortical feedback or help others to gain a deeper insight into the process of neural systems. Perhaps the next question for *Neuromedia* will be: How can more creative metaphorical interpretations be incorporated into the actual process of neuroscience discovery instead of mainly being inspired by the scientific research results?

(top) The Electric Retina at the Brain Fair. Zurich. Scott. 2008
(bottom) Examples of two sided-Interaction by the Public.

1 The Neurobiology Group - https://www.uzh.ch/cmsssl/zool/Research/Neurobiology/Neuhauss/Researchgroups_en.html

2 Quigley HA. Number of people with glaucoma worldwide. http://www.ncbi.nlm.nih.gov/pubmed/8695555

3 Case Study in Singapore: Department of Ophthalmology. NUS. http://archopht.ama-assn.org/cgi/content/full/118/8/1105?ck=nck

4 The Brain Fair http://www.175jahre.uzh.ch/veranstaltungen/parcours-des wissens/forschungsprojekte/artists.html

5 Video documents on user response of The Electric Retina: Archive in the hands of the author.

6 See proceedings of the conference: "Artists in Labs: Puzzles in Process: Interfacing Art & Science. http://www.digitalartweeks.ethz.ch/web/DAW/Symposium07

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Credits

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Biography

Jill Scott was born in 1952, in Melbourne, Australia and has been working and living in Switzerland since 2003. Currently she is Professor for Research in the Institute Cultural Studies in Art, Media and Design at the Zurich University of the Arts (ZHDK) in Zürich and Co-Director of the Artists-in-Labs Program (a collaboration with the Ministry for Culture, Switzerland) which places artists from all disciplines into physics, computer, engineering and life science labs to learn about scientific research and make creative interpretations. She is also Vice Director of the Z-Node PHD program on art and science at the University of Plymouth, UK. Her recent publications include: Artists-in-labs Processes of Inquiry: 2006 Springer/Vienna/New York, and Coded Characters Hatje Cantz 2002, Ed. Marille Hahne. Her education includes: PhD, University of Wales (UK) MA USF, San Francisco, as well as a Degree in Education (Uni Melbourne) and a Degree in Art and Design (Victoria College of the Arts). She has been an artist-in residence at the ZKM, Karlsruhe, Professor of Interactive Environments- Bauhaus University, Weimar and Media lecturer and Director of the Australian Video Festival at the University of New South Wales Sydney. Since 1975, she has exhibited many video artworks, conceptual performances and interactive environments in USA, Japan, Australia and Europe. Her most recent works involve the construction of interactive media and electronic sculptures based on studies she has conducted in neuroscience- particularly in somatic response and artificial skin (e-skin from 2003) and in retinal neuro-morphology. Currently, she is also artist-in-residence with the Stefan Neuhauss Neurobiology group: Institute for Zoology. University of Zurich).

HEADROOM — A Space Between Presence and Absence

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This paper represents the first theoretical account of 'HEADROOM', a site-specific interactive art installation produced by Paul Sermon in Taipei as the successful recipient of the 2006 Taiwan Visiting Arts Fellowship. This residency programme was a joint initiative between Visiting Arts, the Council for Cultural Affairs Taiwan, British Council Taipei and Arts Council England. The development of this interactive art installation has been extensively documented as part of the AHRC Performing-Presence project[1] led by Prof. Nick Kaye from Exeter University in partnership with Stanford University. HEADROOM was exhibited at Xinyi Assembly Hall Taipei, April 2006.

HEADROOM is a juxtaposition of the artist's ethnographic research experiences in Taipei, between the way people 'live' and the ways people 'escape' this city, as an analogy between the solitude presence of the 'bedroom' (private) space and the social networking telepresent aspirations of the 'headroom' (Internet) space. Also referencing Roy Ascott's essay, 'Is There Love in the Telematic Embrace?' (1990)[2], and reminiscent of Nam June Paik's early TV-Buddha installations[3], HEADROOM is a reflection of the self within the telepresent space, as both the viewer and performer. The television 'screen' is transformed into a stage or portal between the causes and effects that simultaneously take place in the minds of the solitary viewers. The installation overtly intertwines private and public space, and the sense of the 'inside' and 'outside' of the installation's 'place'.[4] It is partly in this breaking down of oppositions that the participants' sense of the 'presence' of their co-performers is amplified. In this aspect, HEADROOM radically extends a disruption of oppositions in which video art/installation and site-specific work has frequently operated. The co-performers discover themselves acting out a series of intertwinings of public/private, inside/outside. The installation itself and title emphasize the intimate nature of this overlaying of spaces — the aspect of fantasy or dream — while the public nature of the installation sanctions or appears to give permission or consent to this closeness. In this context, co-performers discover themselves 'coming closer' in a paradoxical distribution of presence — an intimacy produced by a telepresent distance. Here, then, visitors discover themselves occupying and acting out their co-performer's private space, while seeing their own private space acted out by their telepresent partner. The spatial rules of public interaction are breached, producing an intimacy, a particular and shocking closeness, and a dialectic between the explicit sense of being here (in the bedroom, for example) and being there (acting out the space of the other), while seeing and responding to their co-performer's mirrored reaction.

Located in the east of Taipei city in the shadow of the 101 Tower and Taipei's World Trade Centre is a Taiwanese War Veterans housing complex built around 1949. This site has been renovated and converted into a museum and exhibition space. It sits on some of the most commercially sought after space in the city, but because of its historical importance to the liberation of Taiwan it remains a listed building. The back-to-back terraced streets have been knocked through into entire buildings, creating three large exhibition halls that retain their original appearance of the houses on the outside. The spaces that interested me most were the small facade rooms created by the larger space conversion, which have been separated from the gallery space by interior glass walls and are only accessible from existing external front doors. The two facade rooms I used for the installation were identical in size and were used to house a connected telepresent installation where the audience participants in the separate facade rooms where unable see each other. However this allowed the audience inside the gallery to observe both participants in the space through the glass walls. The rooms where only about 2 meters by 3.5 meters wide, and 2.5 meters high. The original houses were longer, but no wider and the original inhabitants often halved the height of the rooms to create separate sleeping and living areas. This two level use of the space interested me, and also

Figure 1: Left — decorated headroom cavity space, right — lived in room with lowered ceiling.

reminded me of the outside of the space with the 101 Tower in stark contrast to the little houses huddled around its base. This paradox can be seen in much of Taipei's culture, from very basic noodle bars and soup kitchens between Karaoke TV clubs, 7/11 convenience stores, high-rise office blocks to countless temples devoted countless incarnations of the Buddha.

The project functioned by combining the two identical room installations within the same video image via simple videoconference techniques. The system worked as follows: The two rooms both had false ceilings lowered to a level of approximately 1.5 meters, which left a cavity space above each room of approximately 1 meter high and forced the gallery visitors to bend down when entering the spaces (See figure 1).

However there was one location in each room where the viewer was able to stand up straight and put their head and hands through a hole in the false ceiling and into the cavity space above. Although each room shared identical dimensions they had a strikingly different appearance. One of the rooms contained drab used furniture in the lower part with a very lived-in appearance, the cavity space above it was brightly decorated, appearing to be a personal shrine or Karaoke bar containing a large video screen at one end. The other room by contrast, was empty in the lower section and very bright in the cavity above, including illuminated blue walls and another large video screen. A video camera in each space recorded a live image of the head and hands of each participant and feed it directly to a video chroma-key mixer. The background in the profile head shot recorded against the bright blue walls was extracted by the video mixer and replaced

Figure 2: Video stills captured when audience participants enter the headroom space.

with the other live profile head shot — placing the two heads opposite each other within the same live video image, as in figure 2.

The red room represented a very theatrical, illusionary space. The blue room, by contrast, appeared to be a more functional back stage space. However, from the outside point of view there was not so much a front and back stage division as a juxtaposition of two entirely separate spaces, which, due to their sheer proximity, where meant to have something in common and yet, somehow, they never become a telepresent synthesis. For Gabriella Giannachi[5] there is a post-modern dialectic here, expressed visually in the impossibility of the two spaces to become one. That the external viewer, standing in front of the two spaces, actually sees 'nothing' but the real, whereas to see the telepresent space you actually have to be willing to be within it.

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1 AHRC Performing-Presence project. http://presence.stanford.edu:3455/Collaboratory/500

2 Ascott, Roy. 2003. *Telematic Embrace*. Berkeley: University of California Press, pp. 232-246.

3 Nam June Paik's TV-Buddha. http://www.medienkunstnetz.de/works/tv-buddha/

4 Kaye, Nick. 2000. *Site-Specific Art: Performance, Place, Documentation.* London: Routledge.

5 Giannachi, Gabriella. http://presence.stanford.edu:3455/Collaboratory/500.

“What Can We Learn From Street Scenario”

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How is it possible that ordinary media practices politically create the liminal space?

In order to understand the complexity of cultural development in Thailand, a new approach and methodology are required. To sketch the image of such an approach, I will argue that research on spatial practices of everyday life needs to be conducted.

It has been universally accepted that Western norms, deriving from its legacy of ideas, have played a major role in every modern society. Many countries have been inclined to guide the future of their nations by proposing national developing plans based on the idea of modernism. Besides tensions, conflicts, and resistances to the modernist idea that have happened in such societies, there are also functional adaptations and absorbed alterations that take shape in multi-layered forms. Implicitly, these types of adapting and modifying forms can be found in social and cultural topology, consisting of complex media landscapes, administrative landscapes, linguistic landscapes, and economic landscapes. It has become crucial to investigate people’s common life and everyday discourses in order to gain a

better understanding of how they define their existence socially, culturally, economically, and ecologically within this space of collision of the new and the old and in addition to that, how they make do with and make use of the material world to cope with the new economy in their own ways. In this instance, it is possible that the same technology used in everyday life is used in different fashions. A research project on media ethnography — spatial discourses of everyday life embodied in those above mentioned landscapes — is a necessary one.

Due to the new form of economic ways of living, multi-layered fashions of practices constitute a form of liminal space; the third space where possibilities that translation and negotiation of such practices take place.

The major objective of my research project will be aimed at this third space. I believe that this space can be found, or be realized, in the universe of the symbolic elements grouped together as mentioned earlier — landscapes of media, administrative space, linguistic world, and economy of livelihood mentioned earlier.

Generally speaking, these symbolic elements can be discovered by observing everyday life on the street (vendors, advertising signage, commercial window displays, footpaths, architecture, etc); in domestic areas (living room, bath room, kitchen, bed room); in public districts (museum, department store, park, civil place, theater, temple, bar, bookstore, work place, and so on); in academic discourse (critical writing, theoretical debate, educational history/knowledge); and in media as a means of expression, or common ways of communication (printed and electronic media, body gesture, ritual activities, fashion, dressing, music, art, graphic design, and etc).

In this paper I wish to consider some aspects of the notion of 'media contestation' found in daily practices or in a site of contestation of ordinary people. So doing, I wish to begin my exploration on this idea with a story of my first hand day-to-day experiences in Chiang Mai, Thailand. It is a story about "stray dogs sleeping in the middle of the street". Its attempt is to bring the case of stray dogs sleeping in the middle of the street into consideration of social science works and media studies in order to obtain better understanding of the implicit political contestation embedded in ordinary ways of living.

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Reality Jam: the Uncanny Space of CCTV-based Video Art

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Closed circuit TV cameras have gained a certain ubiquity in the last few decades. In shopping malls, parking lots, housing estates, railways and airports they monitor the activities of an increasingly security conscious society. We have grown accustomed to their presence — while they ceaselessly monitor us, we hardly seem to notice them. Surveillance techniques like biometrics and new voyeuristic forms of media entertainment are more conspicuous. Yet since the beginning of video art in the 1960's artists have demonstrated sustained interest in ideas of surveillance. Bruce Nauman used CCTV cameras to transform the gallery into an uncanny space where the usual hierarchy of viewer and viewed is reversed. In *Live/Taped Video Corridor* (1969 – 70), for example, he placed two TV monitors one on top of the other at the end of a narrow passageway. Entering this confined space, the unsuspecting viewer is picked up by a camera mounted above the entrance. Drawn toward the monitors, the viewer sees a live image of herself walking down the passageway — but only from behind as if watched by someone else. As she approaches the monitors her image moves further away, frustrating the usual correspondence between vision and movement. This lends the work an ominous dream-like quality where things are familiar but also strange.

Like his contemporaries Dan Graham and Peter Campus, Bruce Nauman was drawn to the live video image as a way of exploring perceptual shifts — those involving subjectivity, space and time. In their work the past can exist simultaneously with the present, the image of the viewer is often doubled or repeated indefinitely, and space itself becomes a kind of maze or hall of mirrors. In Nauman's work in particular we catch ourselves "off-guard" as it were, as if we stood outside ourselves as just another image in the world, an alienated and perhaps unknowable entity. It is in this sense that Nauman's work participates in what Freud calls 'the uncanny'. Freud identified the uncanny as a class of things in which something that has been repressed from conscious thought, something hidden and secret, returns to unsettle the subject. The live image we see in Nauman's work unsettles our customary sense of self-knowledge and self-control. This image of ourself exhibits a certain indifference to our presence — it refuses to face us as a mirror image should. It is an image perhaps of our precarious mastery over 'the self' and over its technologically mediated double.

Today we generally accept that we in the West live in a media-saturated world — bombarded with images from television and advertising. As readers of images, we are accustomed to analysing their codes and conventions, their tactics and ploys. But are we sceptical enough? Harun Farocki[1] is a contemporary artist who makes films by compiling existing footage — surveillance images, training videos and industrial documentaries. His films however are not at all bland. Instead they show how images are used as a means of control. For example, in his film *I thought I was seeing convicts* (2000) we see pre-existing video recordings made in American prisons. Perhaps the most disturbing sequence shows surveillance camera footage of a fight breaking out in the exercise yard at Corcoran State Prison in California. At the first sign of a physical confrontation between two inmates the other prisoners drop to the ground covering their head with their hands. They know the guards will first call out a warning, fire rubber bullets and if the fight continues shoot real bullets. Positioned side-by-side, the camera shares its sightline with the gun used to shoot dead the targeted prisoner. This gives the image an especially oppressive character and implicates the viewer in the shooting. We even see a trail of gun smoke drift across the screen. Although these images are recorded automatically (there is no operator behind the camera) they are anything but innocent. Farocki's film highlights the link between vision and power — warring inmates are placed together in the exercise yard for the amusement of the prison guards. Here the camera not only records the scene but is also a crucial element in the guards' abusive power game.

My own work with CCTV cameras began in 2004 with a video installation called ***The Mirrored Room***. In this work a live image of the gallery space is projected in stereoscopic 3D. Visitors are invited to don a pair of

anaglyph glasses (the type worn in 3D movies) and to interact with their own image. As the viewer moves away from the screen, with back towards the stereo cameras, their 3D image is projected onto the screen surface and into real space. When the viewer attempts to approach this phantom it retreats back into the screen — escaping into a virtual tunnel of images repeated in diminishing perspective. Like looking through binoculars, the 3D screen space is transformed in the manner of a stage set. Objects appear flattened — as if they existed as a series of separate 2D planes stacked one behind the other. The image the viewer sees of herself is also separated out from other elements in the scene — inducing a feeling of disconnectedness from other people and the surroundings.

The Mirrored Room by Margaret Seymour.
Image courtesy of the artist.

In 2005 I had the opportunity to make another work that creates an uncanny image of reality. ***Dis/appear*** was made during a creative residency at the Banff Art Centre where I had the help of a computer programmer. In ***Dis/appear*** (2005) a live image of the exhibition space is processed in real time to incorporate a temporal delay. Time appears to stretch. Moving objects and people disappear from the image. Only things that are stationary are brought sharply into focus. The work was initially inspired by the aesthetics of early web cam video with its grainy images and halting motion caused by the low frame rate. What would normally be considered a deficiency, something that would improve with increased bandwidth, seemed to give visible form to the phenomenon of human memory — to the simultaneous stillness and transience of images we recall from the past. Installed in the public corridor of the studio building at the Banff Art Centre, the work both intrigued and troubled some of my fellow artists. Who was I watching? And why?

The surveillance camera is generally thought of as a straightforward device — one that simply shows whatever is in its field of view. In my work however, I am interested in the way surveillance technologies assume, or can in fact create, paranoia. While some people feel more secure in areas fitted with CCTV cameras, others feel the eye of Big Brother upon them. I am also interested in the way the surveillance image seems to anticipate a crime. Glimpsing your own image on a surveillance monitor can be a strangely disconcerting experience. Seen through the wide-angle lens it is easy to imagine yourself as the criminal. Video surveillance today presents us with an image of public anxiety — an uncanny image that transforms subjects into suspects.

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1 For a more extensive discussion of Farocki's work see — Foster, Hal. 2004. "The Cinema of Harun Farocki", In *Artforum* 43 (3). New York, p. 156-62.

Virtual Reality in Science Fiction Films

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The development of technology allowed people to change their notion of space. Until 500 years ago, people's space existed only inside the continent on which they lived. Once people began traveling to other continents as technology developed, human cognizance about the notion of space enlarged into a global concept. The invention of the telescope enhanced the notion of space into cosmic space, and the microscope increased the notion of space to the atomic world.

By the end of the 20th century, the rapid progress of technology suggested to us a new concept called virtual reality (VR). The technology to make a virtual world has been partially developed through various types of media such as plays, poems, novels and music. However, the virtual world has not been admitted or regarded as something quite so definite since it has no bearing on actual human life space. By having the ability to change the objects in a virtual world and interact with them, people have finally come to accept virtual world as a part of actual space.

Incidentally, VR is not something with which people can easily identify. Thus, deep analysis or research into this emerging domain is very difficult to find, despite the importance of VR in our future. However, movies let people experience firsthand the essence of VR, and science fiction (SF) films are taking center stage in that endeavor.

This research will study the character of VR and the relation between cyberspace and physical space. Furthermore, I will research human existence as depicted by SF films that reflect phenomena related to the development of digital technology.

Virtual reality

The digital era has provided us with an environment that has been created by computers and as a result, we have met a new kind of reality, Virtual Reality that, while it is not material, is nonetheless existent. Being virtual is not opposed to existence, but is simply another method of associating existence with reality.

Webster's defines *virtual* as "being in essence or effect though not formally recognized or admitted," and *reality* as "a real event, entity, or state of affairs." Combining the two words to achieve Virtual Reality, provides us with a definition that states VR as being "an event or entity that is real in effect but not in fact."[1] However, this concept is too blurred to distinguish it from other types of virtual worlds such as the world created by novels, plays or film.

For some researchers, VR is a technology that creates certain types of virtual worlds that generally consist of three-dimensional images. Depending on some engineers, VR is defined by five features. It is a medium of communication, it requires physical immersion, it provides synthetic sensory stimulation, it can mentally immerse the user and it is interactive.[2] But while it is very useful to explain the features of VR, the resultant explanations are too narrow to address the lexical meaning of reality. As I mentioned in borrowing from Webster's definition, VR is a kind of event — a state — not simply a technology or medium. Therefore, in this paper, I use the term Virtual Reality to mean the events, entity or state that people confront in VR systems using certain types of devices such as HMD, data glove or CAVE. People can travel and interact in the three-dimensional virtual world that consists of a digital image created in real time while completely immersed.

Realities in SF films

William Mitchell[3] argues that electronic digital spaces gradually overwhelm physical spaces. According to him, graphic computer screens will slowly drive out public institution buildings. Now, banks are being substituted by the digital images of Internet banking. Also, the various functions of physical space, including shopping, school and companies are placed into virtual space. In such films as *The Lawnmower Man*, even human sex can be accomplished in VR. Furthermore, in *The Matrix*, the physical world can only recognized by a few selected people. Contrary to the people who had experienced the physical world, most people in the matrix recognized the computer-made world — VR — as the only reality.

The two realities, however, have different spatial characteristics although these are identical in appearance or functionally similar. In most SF films, the space for Virtual Reality is composed of interactive digital images. In *The Matrix*, the characters enter a loading program. Then, in the empty white space, as Neo and Trinity prefer, many weapons appear in real time. Here, Trinity can load what she wants. Without being dependent on physical materials, she can produce everything by synthesizing digital images in real time. In VR, location is not absolute. In *Johnny Mnemonic*, Johnny logs in to a Virtual Reality system in order to find lost paintings. In doing so, he is able to visit many foreign places simultaneously. While he connects with Virtual Reality, he can go wherever he likes, and unlike the physical world, none of these places is sequential. So, whether the printing house or the hotels are nearby is not important to visitors. The Matrix explains such space more effectively. Non-physical space is not successive anymore unlike physical space. The corridor may lead to the roof and the kitchen may be changed into a lobby or stairs if needs dictate.

Also, the two realities of virtual and primary are completely separated. In *The Lawnmower Man*, Dr. Angelo says to Jobe who is searching for a method to remove a bomb while he is accessing in virtual reality, "You can't defuse the bombs, can you? You lost all your power over the physical world, once you transferred in here." Jobe cannot do anything over the physical world even if his body is in it. Human consciousness separated from the body is immersed in and moves around VR with eyes gazing at its screen and fixed in a machine located within the limited place. In the film, the physical human body in VR revolves within a virtual reality machine while engaged in a race or sex. *The Matrix* predicts that the screen will eventually disappear and the data will be uploaded directly, still with the body tied.

Minority Report proposes other types of reality. Contrary to reality in other films that substitute the primary reality that leads to another world, it expands the primary world, supplementing it with data and information or virtual objects. The contents are available outside the screen breaking through the frame that divide two reality or screen itself becomes an interface providing multiple realities.

Conclusion

In this paper, I have discussed the characteristics of virtual reality through a brief analysis of SF films. The SF films suggest various alternative realities as well as VR producing an immersive and dichotomic framed digital virtual world and show the different structures of these realities. It predicts that spatial structure will be reorganized by technology, and that we will exist in a mixed and increasingly complex reality.

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Collective Territories: The Shared Space of Locative Media

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Abstract

Within the urban perspective, this essay looks at the space that location-aware media generates and the nature of flow that is projected from and is implied by the collective activities of locative media. How do these landscapes reflect and deform the intricate set of power relations that produced them? What happens to our relationship with the public space around us when we can collectively share information over time with others who are remotely nearby? How might locative territories renegotiate and redefine the original meaning of the spaces they occupy? Locative media is defined here as geographically-based media that can be used to actively create a reciprocal awareness between groups of people and their environment, thereby, merging various types of information and media within the limits of specific geographic landscapes; these limits may vary in dimension from a specific point in a landscape to large areas of space such as nodes and pathways. This essay is a brief analysis of several recent examples in the area of locative art and media, and an observation on the issues that they bring to the transforming public urban landscape.

Mobility and self-governing communities

Locative media can trace its foundations to the principles of circulation and mobility realised in urban cities. The precursor to this mobility is illustrated by social historian Richard Sennett as he describes the ancient Agora of 4th century BC, where people could move "from group to group, …[to] find out what was happening in the city and discuss it."[5] Sennett's assertion that this movement in the Agora, "made possible in simultaneous space, served participatory democracy as well",[5] emphasizes the empowerment that moving freely within a social space may bring. While the structure and definition of these social public spaces have transformed from markets, to public squares, to the coffee houses of the 19th century, the common dynamic within these spaces is the relatively boundless mobility of the individual.

Today, as a global community begins to communicate and move about cities on different scales with various media tools, such as mobile devices and locative media, what happens to our relationship with public space? Author Steven Berlin Johnson equates the significance

Figure1: *Shadows From Another Place*

Figure 2: Figurines along a street in London in *Day of the Figurines*.

of circulation in his participatory website, *Outside.in*,[3] to that of the city street. He uses a comparison of urban avenues where "everyone feeds onto the big streets, and you have insanely overcrowded streets and then side streets that are deserted" to shorter blocks where "the streets tend to gravitate towards the middle zone where there are always some people on them, but not too many"[6] as a method for controlling web traffic and creating a democratised public web space. With *Outside.in*, Johnson has created a large-scale community blog for people to share discussions about neighborhoods and specific places that have been geographically tagged with digital information. Once geographic location data is associated with a weblog and it is retrievable, people who are interested in these smaller communities have a greater ability to engage with each other — similar to the dynamic of a small familiar neighborhood block as opposed to the anonymity of a crowded city avenue.

Renegotiation of space

As people experience their environments, the potential that location-based media brings to public engagement and communication; histories of a place, individual and collective sentiments, memories, and the tangible traces that may be left there — in what could otherwise be a fleeting occurrence — is a great shift in the meaning of an environment. Architects Diller and Scofidio, in their description of the beaches of Normandy, relate ideas of territory and the echoes of history that remain:

> "The real traces of the battle do not offer me much to see, and nothing of that intense human drama. To me, this beach seems what it easily could have been before the event — an ordinary beach dedicated to the carefree recreation of vacationers. Now these shores are blank… while muffled cries and the roar and crash of guns echo in my imagination."
> [Diller and Scofidio, 1994 p.9]

There is a renegotiation of the landscape of Normandy, where the "the past perfect(ed) landscape there responds the echo of a reinvented history."[2] From this point of view, how might locative territories similarly redefine the original or historically significant meaning of the spaces that they occupy? In his prescient observation of the late 20th century internet, theorist Paul Virilio remarks that the "screen has become the city square" where "the crossroads of all mass media" meet.[7] As the internet has grown to include location-based media and communication, this idea of the territory where it may reside is beginning to shift, and the individual's sense of the urban city square and its 'crossroads' could, in essence and meaning, become a virtual node within the physical city where various communities can meet locatively. Conversely, the planned city-square, physically intact within a centralised structure, with the advent of new public engagement, may also have a shift in meaning, determined by peoples' traces of media that are layered over the will of city planners.

Several timely examples of this renegotiation of territory are seen in the locative artworks of Paula Levine and the collaborative group, Blast Theory. Paula Levine's *Shadows From Another Place* [figure 1], "imagines the effects upon San Francisco had the bombs which fell on Baghdad been destined rather for the American city".[4] Her work references geographic positioning technology to physical spaces, with a mapping of the first attack on Baghdad superimposed upon a map of San Francisco. Sites in San Francisco are associated with sounds and photographs of linked locations in Baghdad. Blast Theory's *Day of the Figurines* [figure 2] is a vast miniature model of London, installed in a public space, where participants are invited to "create their own figurine: to name it, answer questions about its past and how it is represented to others."[1] Participants see themselves, in the form of a figurine, placed in the town and they can continue to participate via a mobile phone. They can also revisit the physical model to see any transformations in topography made by the collective participation. In both of these examples, landscapes are being redefined. There is a new type of social engagement in the spaces they occupy. As we experience Levine's *Shadows From Another Place*, we might now hear the horrific crashing of faraway bombs resonating on the streets of San Francisco. And as we experience Blast Theory's *Day of the Figurines*, we may perhaps have a different relationship with the landscape of London as we see ourselves there.

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1 Adams, M. et al. 2006. *Day of the Figurines*. [online] http://www.blasttheory.co.uk/, accessed January 2008.

2 Diller, Elizabeth and Ricardo Scofidio. 1994. *Back to the Front: Tourisms of War*. New York: Princeton Architectural Press, pp. 9-12.

3 Johnson, Steven Berlin. 2007. *Ouside.in*, [online], http://outside.in/public/bloggiest_neighborhoods, accessed January 2008.

4 Levine, Paula. 2003. *Shadows From Another Place*. [online], http://paulalevine.net/projects/, accessed December 2007.

5 Sennett, Richard. 1994. *Flesh and Stone: The Body and the City in Western Civilization*. London: W.W. Norton & Company, pp. 52-55.

6 Turnipseed, Joel. 2007. "Steven Berlin Johnson Interview." [online], http://www.kottke.org, accessed January 2008.

7 Virilio, Paul. 1987. "The Overexposed City." In *Zone* 1(2). Cambridge: MIT Press, pp. 14-31.

AudioTagger:
Urban Space and Wireless Phonography

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Abstract

audioTagger is wireless phonography, exploring sounds in urban space with recordings made with the mobile phone. A momentary event is captured as sonic snapshots of urban life, using the most ubiquitous networked tool at present, in a seamless computing environment, between a mobile phone and the Internet. audioTags are used to trace the location of the recording on an Internet Google map.

Introduction

audioTagger is a sound application for mobile phones. It uses the sound recorder in the mobile phone to capture a sonic moment in urban space, mails the audio file to *audioTagger*, and allows the user to view the result on a Google Map. *audioTagger* is part of research in sonic applications using wireless devices in a mobility context. In this application the mobile phone, being the most ubiquitous device at present, is used to explore hybrid mediated space. *audioTagger* can be defined as wireless phonography, sound writing, bridged with network mapping. Urban life is the subject for investigation, where a momentary event is captured as a sonic expression. The analogy to snapshots in photography can be made.
http://www.moolab.net/mobile/audioTagger.shtml

How it works

Anybody with a GPRS enabled mobile phone can participate in the exploration of sounds in urban space, and contribute to *audioTagger*, using the mobile phone as a field recorder. The participant signs up to *audioTagger*, using the mobile phone at URL, http://moolab.net/mobile/index.html.

The participant will receive instructions on their mobile phone on how to proceed. The participant records a sound file and emails it to *audioTagger*, with the title and street address in the body of the email. They will then receive a text message when the file has been added to the database. A java player can be downloaded from the website to listen to all the sounds added to *audioTagger*, http://moolab.net/player/audioTagger.jar.
The location of the sound file can be viewed and listened to on *audioTagger* as audioTags (See figure 1).

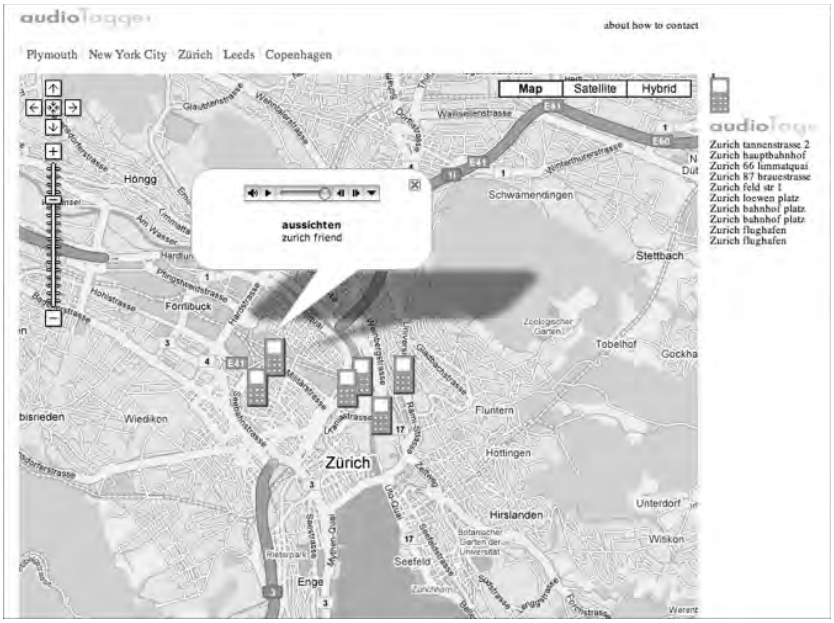

Figure 1: audioTags in Zürich

The wireless field recording

Field recording have been used for various purposes, for example, scientists collecting bird songs, musicologists recording music, or recordings made as sound effects for film, radio, and television. Field recording generally means it has to be planned ahead, to bring the recorder, microphones and batteries to a location outside of the recording studio. Using the mobile phone, already sitting in a pocket has a different set of characteristics from regular field recording. It can be used instantly, and might capture something quite different than a planned field trip with a high quality audio recorder.

Hybrid spaces

The application *audioTagger* examines physical space of everyday presence to be integrated into wireless data space, "Network mapping focuses our attention on the reciprocity between digital and physical-social worlds".[1] Urban space is the subject for exploration and is also where communication is taking place. What does urban mobility mean to the user? How does it affect the field recording? What is the experience of sonic situations in this context?

Related work

The artistic context of *audioTagger* can be found in various areas as location-based art, sound art, participatory art or art specifically oriented towards mobility. Location-based work can be found in different areas such as field recordings, in the work of art groups such as the Dadaists, Surrealists and the Situationists, urban tagging, mail art and telephone art.

The everyday poetic and artistic experience of urban space, realized in new methods for developing human relationships, by art groups such as the Dadaist and the Surrealist, was embraced by Letterist International, Constant Nieuwenhuys, and later the Situationists to form new practices, to create new forms of communication, participation, and subjective experience.[2] An early use of wireless communication technologies, in the late 1950s by Constant and associates in their practice to create new situations, to link spatially separated spaces together, were practiced in Amsterdam.[3]

Telephone art, such as Vito Acconci's mapping piece, *Points*, *Blanks*, *June 13*, *1969*[4] is an early example of telephone art. The artist called into Paula Cooper gallery from public telephones located around Manhattan. The locations of Acconci's phone calls were marked on a map of Manhattan. This work is closely related to today's location-based application and tagging projects.

audioTags

One part of *audioTagger* are the audioTags, which are markers on a Google Map. The audioTags are traces of events of the participant's activities in urban space. The user sends a message from their mobile phone containing a title of the sound file, and a street address. From the information based on a street address, the location is calculated by software. The participant is exploring the sound in the city, collecting events and instances of situations as sonic snapshots, in the form of audioTags.

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2 Plant, Sadie. 1992. *The Most Radical Gesture*, London: Routledge

3 http://www.notbored.org/lefebvre-interview.html

4 In the Collection of Rove Schachter, London

Logical Operations: And ! Or

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Introduction

In 2005, I began work on a hybrid video game and installation environment called *Playas: Homeland Mirage*, which was exhibited at ACM Multimedia 2005[1] and ISEA/ZeroOne 2006.[2] During the course of development, and after several iterations of the project, I became aware of intrinsic problems when using the video game engine for the purposes of an interactive installation, as I had conceived it. The use of video game technology in the production of certain artworks reveals deeper problems related to issues of immersion in virtual spaces. I sought to engender a critically reflective experience that encouraged participants to reconsider their notions of the world and their place within it; often, the technology seemed to thwart that desire, mirroring a familiar critique of video games in general. As a result, I embarked on a trajectory of research concerning the functioning of this work. Along the way, I learned important lessons about the importance of contextualizing my work using the logical operator && rather than ||.

Playas

Playas: Homeland Mirage is a hybrid installation and video game that conflates issues of security within the context of suburbia and our recent obsession with terrorism. Playas, New Mexico was a company railroad town, established in the early 1900s. It was abandoned and then reconstructed as a "suburban-style" mining town in the seventies. Abandoned again in 1999, Playas was purchased in 2004 as the site of a training facility for the U.S. Department of Homeland Security. As if the history of this place was not surreal enough, the DHS has employed a small group of residents who remained there to participate in anti-terror simulation exercises, in effect becoming professional victims.

The installation consists of a video projection at one end of the space and a chair with video game controller in the center. A security camera observes the scene and monitors the entry and exit of viewers within the exhibition space. The projected image is composed of a video game combined with effects that are dynamically driven by parameters extracted from the game, as well as video tracking information taken from the security camera. Depending on the performance of the game player, whose goal is to survive and explore the environment, the imagery responds, suggesting a desert town obscured by a mirage. Virtual game characters include civilians, terrorists, and Department of Homeland InSecurity (DHI) agents.

The Playas construct is composed of nine homes along Mesquite Street. The scenario is built upon images and information taken from its real world double. Environmental background information and imagined family scenarios are available as one approaches objects left behind in the abandoned homes. These objects trigger in-game video imagery that reflects themes suggested by the idea of this place as a mirage. A video tracking system monitors visitors and composites a ghostly form of their image over the video game imagery, and for each visitor, a new virtual character is spawned into the game.

Rules of Play

The use of video game technology in the production of this artwork revealed deeper problems related to issues of immersion in virtual spaces. I noticed that for a subset of viewers there seemed to be very little critical engagement with the concept of the work. Oliver Grau,[3] Marie-Laure Ryan,[4] and others have recognized the effect immersion has on the critically reflective engagement of viewers. Combining art practice with research, I performed a qualitative analysis using methods from Naturalistic Inquiry in order to better understand the workings of critical reflection within the artwork. I learned about the importance of "rules of play" in video games and the many limitations of current human/computer interfaces. The research taught me the value of a hybrid role for artists working with technology that combines practice, criticism, and research. But, the subject of this paper is perhaps most important: despite some claims to the

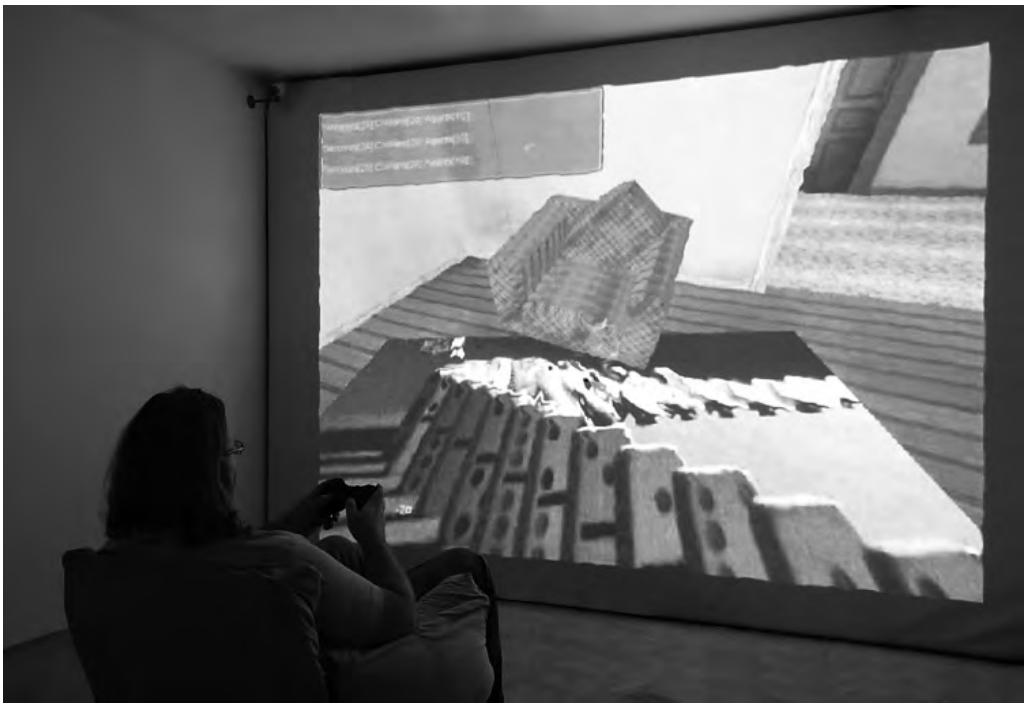

Figure 1: Playas — Homeland Mirage installation view

contrary, mediation requires us to re-address fundamental art-historical issues such as critical reflection. Rather than approaching media with an essentialist "||" (logical operator, or) disposition, we must incorporate lessons from the past, synthesizing a future that takes advantage of the meaning-generation potential of digital media using the metaphor of the logical operator, "&&".

Ecosystem

A tendency exists within digital media for theorists to dismiss the relevance of the dialog of art to the field. Perhaps it is a reaction to the incestuous nature of the art world and all of the inadequacies of the system that defines it. Perhaps it is a reaction to a perceived "snub". A common refrain is that we are part of a paradigm shift and art no longer matters. Others naïvely dismiss art as the bastion of autonomy that was exorcised with post-modernism. Yet others succumb to the allure of a democratic media that invests culture with its own immunization. It is always easier to colonize the future by starting with a "clean" slate. Unfortunately, these positions situate digital media outside an important dialog and contribute to the perception that digital media art is irrelevant or misguided. I choose to use an ecosystems approach that situates the work holistically.[5] In *"A Voyage on the North Sea": Art in the Age of the Post-Medium Condition*,[6] Rosalind Krauss characterizes the current environment of artistic production as the "post-medium condition." Rather than focus on the formal qualities of a singular medium, today's artist synthesizes ideas drawing from a variety of materials. As Hansen points out in *New Philosophy for New Media*,[7] hers is an intermediate position in comparison with Friedrich Kittler, who dismisses, wholesale, the importance of the medium in favor of "digital convergence." Krauss's "differential specificity" does not deny the importance of media, but recognizes the need for the artist to be aware

Figure 2: DHI agents mistake a civilian for a "terrorist."

of the specific characteristics of the medium chosen.

With respect to Playas, I was confronted with a situation that is not new. Kracauer identified immersion as problematic in the early cinema.[8] As a medium that arguably descends from film, a video game in the form I was proposing to use it suffered the same problem. Viewers were entranced by the imagery but seemed unable to engage beyond the surface narrative. It was apparent that I would need to use some of the same strategies developed to address this problem by early experimental filmmakers. This is not unusual. Many of the dialogs that are taken to be unique to digital media have precedent in the conversation that surrounds art. An awareness of the discourse can benefit the artist as well as the development of the medium. Beuys envisioned participatory media well before the advent of the Internet and certainly before we could imagine its impact. The early '90s discourse of Relational Aesthetics has renewed relevance in a world of Open Source software and Web 2.0.

Conclusion

Rather than an ideologically driven, reductive conception of production, the process of creation is analogous to the logical operation &&. It is a process of synthesis rather than elimination. We must combine what we have learned about visuality and culture rather than reject the context. Art contributes to knowledge heuristically by exploring the mechanisms of meaning generation. This characteristic has important implications for a culture that is undergoing the changes we see today. Technology affords opportunities to address the condition of meaning in our lives; the logical operation = digital media && art.

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3 Grau, Oliver. 2003. "Immersion." In *Virtual Art: From Illusion to Immersion.* Cambridge, Massachusetts: MIT Press, p. 23.

4 Ryan, Marie-Laure. 2001. *Narrative as Virtual Reality : Immersion and Interactivity in Literature and Electronic Media*. Baltimore: Johns Hopkins University Press.

5 Kerne, Andruid. 2002. "Interface Ecosystem, the Fundamental Unit of Information Age Ecology." In *Paper presented at the SIGGRAPH 2002: Art and Animation*. San Antonio, Texas.

6 Krauss, Rosalind E. 2000. *"A Voyage on the North Sea."* In *Art in the Age of the Post-Medium Condition, The Walter Neurath Memorial Lectures; 31st.* New York: Thames & Hudson.

7 Hansen, Mark B. N. 2004. "Introduction." In *New Philosophy for New Media.* Cambridge, Massachusetts: MIT Press, p. 1.

8 Kracauer, Siegfried, and Thomas Y. Levin. 1987. "Cult of Distraction: On Berlin's Picture Palaces." In *New German Critique* 40, pp. 91-96.

Virtual Memory: Art Museums and the Internet

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The digitization of museum collections offers an excellent example of the merging of virtual and material reality. After all, actual artefacts are stripped from their material qualities and removed from their physical exhibition spaces, to pop up on the Internet as virtual, hyperlinked objects. It has been often argued that our sense of reality is divided into the 'real' reality of everyday life and the virtual reality of cyberspace. According to Virilio (1995), this split causes a schizoid experience of perception that will eventually lead to a fundamental loss of orientation. Baudrillard laments the supposed disappearance of our physical reality, observing the sudden emergence of the virtual through digital technologies, which "gives us the sense that it now marks the vanishing or end of the real" (Baudrillard 2003: 39). In this paper, I will contend that the digitization of art works forces us to rethink conventional ideas of virtual reality. Focusing on Tate Online, I will argue that the virtual domain of cyberspace is not, in fact, opposed to the physical space of the museum.

Tate is a group of four British galleries, keeping more than 60,000 works of art. The museum includes an additional storage facility and an exhibition space on the Internet, aptly called Tate Online. Launched in 1998 the website was conceived as a concise catalogue of Tate's vast collection of paintings, sculptures and sketches, which has gradually grown into a self-supporting organization. It now presents an overwhelming compilation of images and texts to a diversity of audiences, ranging from scholars to children. Tate Online also hosts a unique collection of net art, mostly commissioned by the museum itself.

Every object in the Tate collection has its own page within the website, consisting of a digitized picture and an overview of technical details, such as title, size, materials, artist's name and year of acquisition. Additionally, all works are described by a set of key words, which can be used as entry points into the online database. For instance, a visitor of the website may want to look for a particular painting by way of typing in its title or the name of the artist, but she can also search the collection more randomly by entering an art-historical notion or the name of a specific technique. This means that the painting Yellow Attenuation by Peter Sedgley can not only be found through its title or the artist's name. It will also be presented to visitors looking for *colour*, *Optical Art*, *geometric*, *musical analogy* and *sequence*, as well as the years 1930 and 1945, the number T00739, and the medium of painting. Furthermore, innovative visualization techniques allow visitors of Tate Online to glance underneath a statue, to 'feel' the texture of a painting or to walk around a piece of installation art. These practices of looking amount to a shift of perspective from the supposedly detached involvement of the viewer towards the domain of 'haptic visuality' (Marks 2002, 2004).

Some may say that the factual list of attributes used to describe Yellow Attenuation does not reveal any relevant information about the painting itself, as it neglects the sensuous aspects of the material object or the effects of its presence in the gallery space. The digital representation is, in other words, no more than a poor substitute for the original work of art. Nonetheless, these seemingly meaningless details denote specific, interrelated qualities of the painting. Taken together, they constitute a concrete work, evoking its presence in cyberspace. In addition, they connect this specific painting to other works of art in Tate's online database. The key word *musical analogy*, for instance, creates a passage from Sedgley's canvas to the sculpture *Song of Songs* from 1946, which in turn is connected to an anonymous nineteenth-century drawing. Linking together divergent works of art by creating various relationships between words, images, numbers and colours, Tate Online does not follow the strategies of display that are typical of more conventional gallery spaces. If the traditional museum can be understood as an institutionalized form of cultural memory, by presenting paintings and sculptures in the logical, fixed order of art history, then Tate Online should be interpreted as an "intensive, zigzagging, cyclical and messy type of remembering [that] does not even aim at retrieving information in a linear manner" (Braidotti 2006: 167).

Stirring the visitors' imagination, Tate Online's unexpected couplings create "a space of affinity and correlation of elements" (p. 170). This particular space is opened up by a shift towards haptic visuality. The notion of haptic visuality implies a look that acknowledges the materiality of the object, although it does not involve any actual touching. By coining this term, Laura Marks intended "to restore the flow between the haptic and the optical that our culture is currently lacking" (2002: xiii). After all, the Western tradition of linear perspective has forced a clear division between objects and their beholders, causing the object to be seen "as distinct, distant, and identifiable, existing in illusionary three-dimensional space" (Marks 2004). This way of looking can be conceptualized as 'optic visuality'. Haptic visuality, on the contrary, is not limited by the narrow view of linear perspective. Vision should rather be understood as a form of contact, instead of being a disembodied experience. These considerations correspond to Virilio's writings on the sensory effects of digital space, for he claims that cyberspace is a tactile perspective, meaning that feeling or reaching at a distance "amounts to shifting the perspective towards a domain […] of contact-at-a-distance" (Virilio 1995).

Tate Online's haptic or tactile dimensions are best expressed by its first net art commission, *Uncomfortable Proximity*, for which rogue artist Harwood photographed some famous paintings in close-up. These pictures were fed into a computer and combined with other images, such as detailed illustrations of inflamed skin, resulting in a series of disturbing collages. The extreme close-ups transform the smoothness of Tate's digital imagery into a landscape of cuts, pores and bulges, as "[t]he digital camera allows a proximity to material, to skin, to the surface of paint that excels the eye's trained ability to sort and recognise" (Fuller 2000). The blown-up pictures of white, reddish and yellow scabs may cause feelings of disgust, but they also tempt the viewer to pick and scratch, demonstrating "the very real effects of virtuality" (Grosz 2001: 81). Like the intuitive or affective browsing through Tate's digitized collection, this touchy-feeliness is characteristic of haptic visuality. Opening up an endless space of affinity, connectivity and presence, Tate Online shows that the virtual domain of cyberspace does not ignore the sensory qualities of physical reality.

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Applications of the Soundscape Reconstruction (SR) Technology in Acoustic Ecology Research, Education and Entertainment

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Introduction

The Soundscape Reconstructor (SR) is a new technology first announced in the International Symposium of the Society of Music and the Computing on June 2007 (SMC07)[1] by the author and Dr. K. Papadimitriou. SR allows the reconstruction of the Soundscape of a given study area and takes advantage of a sampling methodology developed by a research of the Greek Society of Acoustic Ecology which was supported by three major Greek universities (Ionian, Aristotle and Crete) and the EEC program "Pythagoras". One of the characteristics of SR is its capability to be used as the engine for the realization of a series of interactive installations with educational, entertaining and artistic purposes. The addition of motion tracking technologies to the SR system for the extraction of the coordinates of a user moving in a virtual map (usually projected or printed on the floor of a virtual space) resulted in a series of installations based on SR, the typical structure of which we will present here.

Basic terms

Soundscape is the sum of all sounds that are produced by natural biological or human sources in a given area and it is the result of complex and highly interactive biological or natural procedures.[2] The methodology of sampling which was used by the research group in Greece involves not only field recordings but also subjective observations by trained researchers, measurements of the natural conditions like humidity, speed of direction of the wind, spectral analysis of the sounds etc.

The Soundscape Reconstructor is an interface initially developed in MAX/MSP which provides a real time reconstruction of the Soundscape of a geographical area for every point of it. The user can navigate and listen to the Soundscape from any point on the study area. The system can also map audiovisual elements like video, extra audio and graphics and trigger them as the user approaches specific areas on the map. The reconstruction algorithm uses sonic elements that are sampled on the field and data that are collected from the subjective observations to reconstruct a realistic Soundscape for every point of the area for the 4 seasons of the year (autumn, winter, spring, summer) and for every time of the day (in 3 hour steps).

From the application to the installation

In the first implementation of SR, realized in MAX/MSP, the user can choose a season and a time (for instance autumn, 6pm), create pathways in the area's map (displayed on screen) and listen to all the sounds that would have listened if he took the same route in the actual area. Furthermore he can choose to take the same route in another time of the day, or season of the year. The Soundscape Reconstructor reproduces the Soundscape accordingly. Pathways can be saved, loaded, time stretched and edited. Also graphics, video and data about the area and the soundscape can be mapped and reproduced. It's interesting to note that SR is not simply triggering audio events in relation with specific spots but reconstructs the Soundscape in a continuous way for every different location. Information about the nature of the Soundscape at any location and audiovisual events can be also projected and synchronized. This dataset includes volume of natural, biological and human sounds, description and volume of the origin of each sound, and of course time and geographical data.

After the completion of the pilot implementation of Soundscape Reconstructor we examined the possibilities to use it as the engine for the realization of a series of installations. This led to the idea of creating a virtual space that represents the actual area instead of using the computer screen and the mouse. The first sampled area was the Aharavi area in Northern Corfu, one of the Ionian islands of Greece. This area is protected by the Natura 2000 program because of its special ecological and natural beauty. The user can move (or stand) freely in the map or satellite photo of this area and listen to the Soundscape for any season of the year and time of the day he chooses in advance. Specific locations in the map

trigger audiovisual events that are projected in the walls of the virtual space giving information and views of special interest. The user can "record" its route, play it back for another season or time of the day and notice the variations of the Soundscape of the area, and even take it with him in MP3 form. The system records the produced sound as each guest moves on the map creating unique Soundscape tracks. This mechanism can be used for the presentation of a natural area of a special interest around 3 square miles (as in this case of Aharavi) making the audience familiar with concepts of acoustic ecology and ecology in general in an entertaining way.

The way a typical installation works is this: A DV camera (or more of the interactive area's scale is big) is watching the interactive area and feeds the video signal via a firewire cable to the motion-tracking computer which calculates the coordinates of each guest in relation with the virtual map. This system encodes all the guests' coordinates many times per second into MIDI control data and transmits them via a MIDI interface and cable to the Soundscape Reconstructor host. This computer realize the soundscape reconstruction for each user in real-time and transmit the resulting audio to the headphones of each guest. In addition they trigger supplementary video or audiovisual events which are mapped in specific locations in the virtual sound map, once the guest has approached them.

The structure can be seen in the following picture.

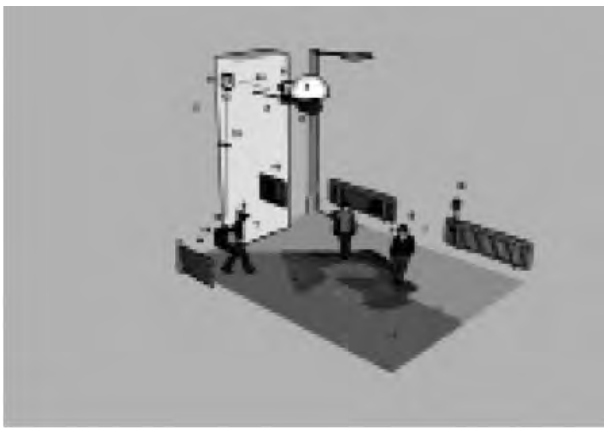

Figure1: Elements of a typical SR Installation

Basic elements explanation:

1. Floor / Soundmap (Surface 5 X 6,5 meters or more -with the same proportions- displaying a map or satellite photo of the actual area.)
2. Building or scaffolding. (Provides support for the camera and hosts the motion tracking system.
3. Camera support (For a lightweight camera)
4. Camera protection umbrella
5. Camera, Standard DV format
6. Flood light or IR light
7. Audience (1-6 persons, depending on the application)
8 Colored hat (For the color tracking)
9. Wireless headphones (Providing the Soundscape in real time)
10. Firewire cable (Transfers the DV image to the motion tracking computer)
11. MotionTracking system
12. USB MIDI interface (Transfers the coordinates of each guest to Soundscape Reconstruction computer)
13. SR host Computers (1-6 according to specification).
14. Headphones transmitter (Transmitting the Soundscape for each guest)
15. Time/Season selection pane l(It's a button based panel than gives each guest the chance to choose the season and the time of the day he wants to realize his virtual route)
16. PROJECTOR(s) or TV(s) (0-4 according to the specification)
17. Supervisor
18. Installation Information Board.

Conclusions — further research

We described the main elements and the functionality of a typical interactive installation based on the Soundscape Reconstructor technology. Our on-going research in this field is focused in three main areas.

1. Scientific research on acoustic ecology and evaluation of the sampling methodology.
2. Design of interactive installations for artistic and educational purposes.
3. Development of tools for the visually impaired persons using haptic maps and SR.

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Aesthetics of Knowledge Space

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How to present knowledge as a visible shape? How to visualize it as a space to enter? Looking from a perspective of media art, the artists' presentation examines the notion of knowledge space. The staging of information structures and the procedure of interactive perception will be exemplified by the authors' own works.

Introduction

Knowledge is understood as something that originates in processes of interacting with the world and is actively constructed by the individual. "You can't manage knowledge — nobody can. What you can do is to manage the environment in which knowledge can be created, discovered, transferred, adopted, adapted and applied," say Knowledge Managers Collison & Parcell. As artists we produce artistic environments in which knowledge can be created. Inspired by art historian Aby Warburg and his notion of the Denkraum, we do research on the Virtual Denkraum and the aesthetics of staging knowledge space to enter — between experience and expertise. By knowledge space we understand architectural space furnished with data.[1] Thus physical space transforms into a data landscape to walk-in — an interactive environment connecting data, space and user. The visitor of such an environment is not only the protagonist, but also the producer of knowledge through interaction. For the human it becomes an enlarged action space that is experienced fourfold: through perception of the spatial (and other attendees), by exploration of data, production of knowledge through active experience, finally, through communication with others. In this article we introduce media art examples of staging knowledge, driven by different paradigms of interactivity — and as a public space of knowledge.[2]

The virtual exhibition: from representation to presentation

The Virtual Reality installation "Home of the Brain" (1990-92),[3] reflects not only on the new medium, but the media discourse itself becomes the theme of the virtual exhibition — a philosophical debate. The

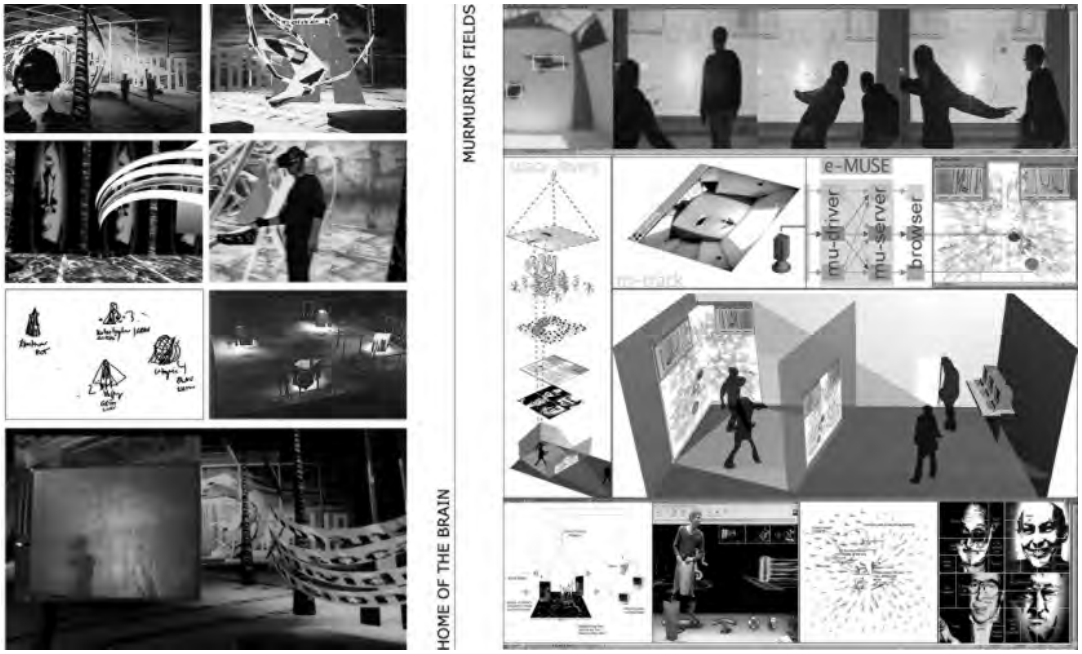

Figure 1: Assembling the interactive stage: Home of the Brain (1990-92) and Murmuring Fields (1997-99)

interactor “moves” through the space that contains four houses in which the philosophers minds “live”: Joseph Weizenbaum, Marvin Minsky, Paul Virilio, and Vilém Flusser discuss the digital culture. The interactor is enclosed literally in the discursive environment. With the aid of a data glove, one visitor at a time navigates through the 3D-environment visible in the data goggles. Other visitors see these images on a projection screen. They take the role of the chorus in ancient Greek theater by making comments. The navigator becomes the storyteller.

The mixed reality stage: from movement to bodily experience

The isolated space of mind “Home of the Brain” was transcended through dialogic forms of play with other participants in “Murmuring Fields” (1997-99). Spaces for data and action are combined using an invisible tracking procedure, a video camera interface, to building up a mixed reality stage. The stage is filled with virtual sound elements — philosophers’ statements. Movement in physical space triggers sound in data space. Movement breaks words into syllables and transforms into a sound collage. Two interactors produce sound samples. “Poli-tic-tic-tic”, says Flusser’s voice as soon as a performer moves around and thus interprets his original statement: “Boys and girls on the computers turn their backs to **politics** and turn to each other.” The audio-visual installation is played like an instrument using body movement — acoustic space is experienced bodily. Knowledge here is not acquired by reading, but through the body. The theorist of cognition, George Lakoff, emphasizes the importance of the body and its entity for thought processes. Sensory experience and reflection combine together in “sensory thinking of the body”, he writes.[4] Art historian Oliver Grau recognizes “Murmuring Fields” as well as “Home of the Brain” as spheres of thought referring to Aby Warburg. Grau states that the works create a new type of a “Denkraum”.[5]

Staging the information flow in Urban space

How can online archives be used not only virtually, but also physically as walk-in areas? This question was taken up with “Energy-Passages”,[6] an installation on creating knowledge as a process of energy in the city of Munich. The project reproduces the news by producing linguistic space in form of a data flow. Hundreds of catchwords, taken from daily newspapers, appear as a visual information flow on the street and are spoken by artificial computer voices. As soon as passers-by select a word, thematically related links become visible in the flow, which can also be experienced as an audiovisual echo. The visitors “write” anew “Living

Figure 2: Energy-Passages — interactive installation in urban space, Munich (2004)

Newspaper" by means of their personal choice. During four weeks runtime of the installation, the system builds a collective memory of the interactions. It confronts the most frequently used words of the newspaper with the most often well-chosen words of the visitors. While in the newspaper a kind of forcing into line is to be observed, the audience gets a voice and expresses its own interests. The work uses the energy of the actors and plays with concepts like fragmenting, forcing into line and censorship. The ranking of words used in the newspaper: Germany, Million, People. The words chosen by the audience: Victim, Love, Food.[7] The disparity of the language of the mass media and the preferences of the people become clearly visible. Sherry Turkle, MIT Professor of the Social Studies remarks: "The notion of a spatial experience of the discourse of the news within a city space and the possibility of deconstructing the newspaper captures the fragmentation of how media is experienced by citizens in a culture of simulation. It thus mirrors and concretizes an important cultural and political moment, turning it into an object for reflection."[8] Through interaction reading becomes a process of thinking in acting. In the real sense of interaction the installation produces connections between the people.

Deep Storage's[9] storytelling

With "Home of the Brain" the media discourse itself became an object of reflection. In "Murmuring Fields" a space of mind through dialogic forms of play with other participants occur. With the metaphor of the flow the static archive is transformed into a time-based medium and takes up a narrative function. Moreover, the linguistic play invites people to take part. And because of the interactive audio-visual character it offers liveness that is much like theater. However, the difference between the two is the fact that "Energy-Passages" is interactive and reversible. In all of the installations one can move in a "knowmadic" way to gain new experience. Future learning environments could learn from knowledge arts and adapt the virtual Denkraum through staged learning environments.

More of Fleischmann & Strauss' work:
http://netzspannung.org/about/mars/projects/en

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From Work of Art to New Media Art as Research

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Today, we come across new media art projects that occur at the intersection of contemporary art, networked economy, new politics, technoscience and new lifestyle. The new media art pieces (web installations, hactivists' interventions, net.art, computer games mods) are often only one click away from Web embedded sites and portals of political organizations, big corporations and e-commerce. This new condition discerns noticeably from the modernist paradigm based on differentiation of artistic realm from the social. The very nature of art is steadily being interrogated and re-conceptualized; the artistic nature of art is getting more and more instantaneous, fluid and temporary. In a fashion, as Hakim Bey has coined the term "temporary autonomous zones", one can talk about the "temporary art projects" as entities that have artistic signification and justification for a very short period of time. They spring up in a very limited time, but in a different time and context such projects could gain quite different signification and functions.

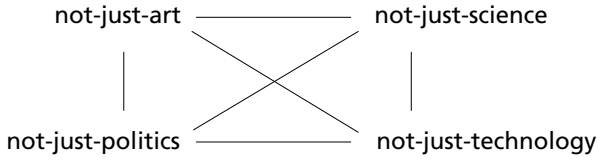
While the traditional aesthetics begin by exploring the specificity of work of art and its crucial features (form, genre, creativity, author, aesthetic value), the contemporary art theory calls into question the very nature of the artwork and its artistic function. Rather than be a stable and aura-based object, the piece of art is a process, an artistic software, an experience, a service devoted to solving a particular (cultural and non-cultural) problem, a research, an interface, which also demands from its user the ability for associative selection, algorithmic (logical) thinking and for procedures pertaining to DJ and VJ culture, such as (re) mixing, cutting, sampling, filtering and recombination.

The transformation we must come to terms with can be summarized in this way: in today's world the art-making, embedded in a novel condition of immaterial labor, finds its own purpose in problem-solving and research activities, which bring something into the world that is not there: an alternative mode of knowledge coded in a way that discerns itself from common scientific methods. Such activities are embedded in a present condition of post-Fordist labor and in a realm of immaterial production for privileged (intellectual) and innovation based services. What do we talk about, when we are mentioning art-making in terms of art service? The art service is not so much the manufacturing of things as it is a process of reshaping the thing, moving it, connecting it and incorporating it into new relations and new contexts. The service presupposes a problem, a challenge or an order to be solved or carried out. The performer of the service is always faced with a certain task, challenged to solve it in a sequence of steps chosen as economically as possible. The service therefore ends with a solution to the problem (or its removal) and not the manufacturing of an object. The service always implies an algorithmic procedure that has to be as rational as possible, economical, divided into phases, steps, with instructions needed for it to be carried out. New media art blurs the lines between "two cultures" (Snow's notion) and can be mentioned even as a dry run for experiencing new forms of communication, research and even post-political politics. The research function of new media art projects is in exploring those features of objects (and concepts, intellectual paradigms) that are left behind within the official scientific investigations and can be understood in terms of public accessed critical science as it is — in terms of Critical Art Ensemble endeavors — opposed to the official one, executed by means of professional scientists.

Although the social system of art is explicitly auto-poetic and self-referential, such noticeable turns in contemporary art are possible, due to profound and essential shifts arising in other fields as well. Reality itself has mutated too, for it has passed over noticeable turns and shifts of paradigm; nowadays we can find out that traditional concepts and devices for its understanding have become useless, even obsolete. All its important components have become included in a new constellation defined by bio-politics, techno-sciences, globalization, multiculturalism, empire, post-Fordist immaterial labor, post-political politics, (social) networking, the multitude and the cognitive capitalism. The solo play of the new media art could not be possible

today, if the "prime" (given) reality components and forces would not go through such transformations; in the fields of science, technologies and politics processes occurred which lead toward their art-like nature in terms of destabilization of traditional forms, one could say as parallels between destabilization of artifacts in today's art and destabilizations of national state in the globalized (trans)politics, material wealth in (new) economy and the project of discovering natural laws in techno-sciences.

Today we are witnessing the interactions of "scientific art" and artistic technosciences, technologies as culture, and new forms of politics. Referring to alternative browser Webstalker (as a temporary piece of art), Mathew Fuller (1998) has coined the term *not-just-art*. This term seems to be a proper name for the very nature of the contemporary art-of-in-between spaces, and could also be applied in other fields. The e-science, which refers to other-than-science (its e-research brings cultural innovations to the fore) could be called not-just-science, and within very similar fashion terms like not-just-technology and not-just-politics could be introduced as well. The basic interactions in the field that enables the shifting paradigms of art as research, post-political politics, technology as culture, and e-science can be presented with the following scheme:



In today's world, the new labor force's time is being extended to the worker's entire life, and there are no hard and fast lines separating art from immaterial labor (both are embedded in a social networking reality), and the not-just-politics comes to the fore in terms of "post-political politics" (Virno's claim), shifting the very nature of politics away from the (national) state and parliament democracy.

The post-political politics of novel subjects (multitude, artists, hactivists…) is in dialogue with art, which consciously gives up the aesthetic function and leaves behind the social irresponsibility of its realm as it used to be defined within modernism. The artistic features of today's art cannot be defined simply as a characteristic set of artwork properties; neither can they be regarded as the result of a canon and institution of art conventions, we argue instead that the very nature of art is a product of a distinctive mode of temporary interactions between the arts and other key fields of the social. The contemporary, new media based projects of art deliver — let us say, when it is a matter of up-to-date issues of globalization and multiculturalism, surveillance, human rights, personal data protection — new and entirely competent knowledge presented as an artistic surplus, which is complementary to the knowledge produced by natural science, humanities and social sciences. We can encounter the issue of surveillance in the presence by taking into consideration contributions of social theory to this field, but our knowledge about this topic can be enriched also by artistic concepts of this issue in form of artist actions (e. g. Surveillance Camera Players) and hacktivism and net art events.

There are many new media artists that are aware of research as a novel function of their endeavor, meaning that their poetics and statements reflect this cultural turn. E-literature writer Mark Amerika argues for instance that "with *FILMTEXT* I take this surf-sample-manipulate research practice right into the bell of the beast, interfacing Hollywood with hypertext, video games with literary rhetoric, interactive cinema with image *écriture*." The *FILMTEXT* (as one of his significant projects) demonstrates that text-making in terms of new media paradigm is surf-sample-manipulate research practice; rather than being an artist or author (written with capital letter), the textscape producer could be defined as a (new media) researcher dealing with the issues of the new media verbal. She undertakes research in a way that promotes and privileges a very intimate and rich human experience in embedded knowledge.

A Reflection of Photography as a Media of Art and Technology in Indonesia

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The history of technology is the history of developing techniques and inventing it is supporting devices. Knowledge and cultural background urges mankind to invent and just the opposite almost most scientist analyzes maters by reflecting on technology because the proficiency of technology will directly effect on economic efficiency and other traits.

Photography as a form of development in mechanic procreation of art is a phenomena of art and technology in indisputable growth. At it is commence, the documentary purpose of photography has taken over the era of realism painted artworks. At this period the human demand for documentation is crucial. Photography extends and becomes a new form of visual reality. For instance, the conception of studio photography for European high society, mass media illustrations, nature documentation and other fields of study. After over half a century after it was introduced, photography has given important contribution to cultural progression of the modern human particularly during the 20th century when it created a revolution in terms of vision or the way of seeing. Photography does not only create accurate imagery, but also specified and objective in presenting reality.

Post-Photography

Regarding this matter, there are indications of how our people act towards the condition of modern photography. Yudhi Soerjoatmodjo[1] says that there is a trend for the demand scheme for our society related photography as a part of an industry. How photography at its commencement replaced the role of wood cut in printed media and was blamed to be imprudent as a consequence to its unlimited ability to replicate. Photography was viewed as low-class art and even doubted to be a work of art.

The achievement of digital technology today is a triumph delightfully appreciated by business people. Photography technology is further applied in many other forms of technology like in mobile phones, video cameras, and portable computers/laptops. Electronic companies compete in producing affordable photo camera aimed for people from lower class economy. At this period technology in photography was positioned as something accessible for anyone and anyone can “instantly” become a photographer. Business of opportunities expands from big cities to small towns. People viewed photography had archived the height of perfection[2]. Photography became a form of art that is massively accessible to people at every level, thru institutions, like mass media and publishers. Photography became a symbol of the spirit in modern culture; democratizing the world of imagery (before photography, painted artwork was possessed only by a specific class in social hierarchy).

The conditions of photography particularly in Indonesia are an exception-far from phenomenal. Here art institutions are not equipped with a systematic and distinct syllabus. This is the cause to why photography overlaps-covering parts of the same interest- in art and technology. Independent organizations founded by community base groups are rather rare; therefore the steps for appreciation of photography and its every occurrence becomes a challenge. Further, it turns into motivation and spirit to analyze Photography comprehensively by presenting works of photography crafted with traditional techniques. This doesn’t mean that the new techniques are not of interest. It is more of an effort to keep up with the fast development of technology causing the old techniques to be forgotten and also to maintain the availability of materials needed for conventional photography in the market.

We have run campaigns to promote past photography techniques such as cyanotype, photogram, pinhole camera, lomography, and techniques of the darkroom[3]. We intend to regain the sprit of learning the history of modern photography as an effort to democratize knowledge and photography studies, affordably and massively. The purpose is to create new generation of photography moved by the spirit to bear the future of photography that will be viewed more than just a vehicle of mechanic reproduction but also the possibilities in progressing appreciations in the future. The demand for advance photography technologies should create passion and enthusiasm as forceful as it was when first discovered.

As a conclusion, I would like to state that photography should be reanalyzed o achieve it is redline of leading strength in visual art appreciation. The history of photography will be the path to our goal for this progression by employing avocations and informal education.

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1 Indonesian Curator of Photography

2 The end of photography century called post photography period (see *Photography: A Cultural History*)

3 Part of my community campaign since 2000 until now, based in Malang Indonesia

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The Ecstasy of Hyperrealism

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The hyperreal can be defined as the indiscernibility between the real and the illusory, the order of the image becomes entangled. Cinematic realism has lost out to the spectacle of violence, in violence we glimpse the interval, the convergence of different temporalities. In these images of the hyperreal it is not the violence itself that delights the viewer, rather it is the wonder of an impossible temporal moment. Within digital cinema hyperrealism begins with digital montage.

A jump cut in film editing is a cut that removes a section of a continuous shot. The technique breaks continuity in time. Any moving objects in the shot are displaced. This jumping does not correspond to a rational explanation. A match frame is considered its opposite, it cuts between two different spatial images creating either a sense of continuity or juxtaposition. With the digitisation of cinema and the rise of non-linear editing and compositing software "time becomes spatialised, distributed over the surface of the screen"(Manovich 2001:325). Digital montage is a convergent cut, a spectacle where textual qualities are more important than temporal continuity, reality becomes ambiguous with disconnected arrangements of time. This disjunctive cut is a mastery of spatio-temporal composition. Jan Spechenback (2000) warns of the danger of the anything goes unrestricted temporality of digital cinema, this attitude signals "the collapse in the rational movement-image of classical cinema" (Darren Tofts 2007:114). This spatialisation of time is a visual syncope, an impossible absence.

For Catherine Clement(1994:1) this moment of syncope is "an absence of the self. A 'cerebral eclipse.'" Syncope is a contracted instance, as Clement(1994:5) says, "Syncope makes things go quickly, it accelerates." The contraction occurs as a moment of discord, syncope catches you off guard; it is unexpected. A syncopated rhythm is born of an unresolved moment, it is the art of rapture, a jouissance of the mind and body. A mental disjunction, there is an element of ecstatic rapture about the suspension of time where temporal absence defines form. The syncope of digital cinema involves a divergent temporal reality. The moment of crisis causes the reality to become indiscernible, a convergence arises between the actual and the virtual. This interval distorts temporal reality to an impossible state. The visceral time of syncope leads to rapture in the hyperreal. It is the spectacle of digital cinema: time is now suspended and absent of the self. This non-linearity of form is manifest through the spatialisation of time. The body spasms in a moment of rapture, flickering to and fro, spatial displacement fractures consciousness, the viewer is seduced by the impossible.

Movement and form are abstracted through a suspension of time. The exploration of ruptured moments is essentially the pursuit of the body in time. This attempt to reveal the nature of the disrupted form is inhibited by its instability. This departure from stable forms is apparent within hyperrealism. Forms are displaced in time, they become dislodged from a coherent linear progression. The gap in time, in-between the ruptured movements of the body, is where syncope lies. Digital cinema is the cinema of hyperrealism, the execution of the impossible, "[i]t is a way of sculpting time, of capturing extraordinary moments of transcendence…" (Tofts 2007:112). This is the Deleuze's 'interval' at work in the unstable flow of digital media. Hyperrealism floods our sensory experience in a constant barrage to gain our attention. Here we are captives to the addiction of the ecstasy of hyperrealism, where speed and time orchestrate syncope. Meaning is derived from what is lost, from the textual qualities generated by this 'temporal hollow'. The ability of hyperrealism to seduce is in the interval, exposed by violence: the moment of impact, the transcendence, the duration. Digital montage is used to temper the speed of violence transitioning between time and space. The violence is interposed seamlessly with stylised linkages of virtuality or by a visual attack exacerbating the violence of speed, creating tension that is viscously punctuated.

In post-production, to ramp an image is to displace its temporality. Outside of this technical understanding to ramp is to act threateningly or violently. To combine the meanings within the discourse of digital media would be to do violence to the temporal existence of an image. This technique of ramping produces a heavily stylised digital temporality as all modes of time compression are available. Here, digital cinema has the capacity to do violence to time itself. This method of ramping is rife throughout the action and horror sequences of digital cinema, though it is not the violence that arrests our attention, it is the syncope of hyperrealism, the ecstasy of the impossible.

The digital effect of 'bullet time' is essentially a temporal distortion, a slowing of perception in order reinforce a notion of imperceptible speed, as the name implies it is at the delight in the unknowable temporality of the bullet. Darren Tofts argues that these moments of bullet time, these moments of virtuality have an uncanny parallel to Deleuze's concept of the 'time-image'. For Deleuze's the 'time-image' is the mutual coexistence of the virtual (past) and the actual (present), an interval in temporal continuance. This interval for Deleuze, "is an indeterminate pause, a dislocated transition that is neither here nor there" (Tofts 2007:115). Here bullet time can be considered a temporal manifestation of the disjunctive cut of digital montage. It exists outside of any known temporal existence, it is a simulated expression of false movement. Bullet time is the impossible celerity of violence, a visual point blank asserting the rhythm of the interval. It is the contemporary romanticisation of the celerity of violence, the duration of the bullet fired from the gun. It accosts attention with a sense of ecstasy, an interval of hyperrealism.

The manipulation of temporal perception is induced by the direct sensory experience of the interval. It is the inevitability of technological violence that injects hyperrealism into the aesthetics of digital media. Digital montage causes a tendency towards disrupting the continuously variable to capture the mind in a moment of syncope, an interval in time. The contraction of perceived time causes consciousness to slip into a moment of syncope, the ambiguity of the interval. This temporal short circuit is an implicit aspect of the hyperrealism. The moment of absence is mediated by violence, it is an act of syncope.

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Reality and Subjectivity: Digital Films as Cyborg Texts in a Post-Modern World

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In recent years, a new breed of films has emerged. *Mirrormask*, *Sin City*, *Sky Captain and the World of Tomorrow*, *Casshern*, and *Immortel: Ad Vitam* are among the world's first 'fully digital' films. These films are shot almost entirely on blue/green screen environments, utilizing digital effects to create new and fully artificial worlds and characters. Furthermore, digital animation has taken huge steps beyond its initial *Toy Story* years, most recently resulting in *Beowulf*, which raised the debate of whether such a production should be categorized merely as 'animation'.

These cinematic advances are indicative markers of where society is today. The film industry has played an important and influential role in charting human concerns and conditions throughout the 20th century. With globalization, digitalization has become today's key phenomena. Digitalization is increasingly a part of everyday life; citizens are becoming *cyborgs* with vast new possibilities. Digital films are perhaps an expression of post-modernism and cyborgism as it deconstructs the barriers of reality and fiction.

The cyborg is a 'cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction'[1] It is a combination of the organic and machine, creating a symbiotic relationship between two seemingly irreconcilable things. The social cyborg relates to discursive formations present in culture and society and inhabits the spaces of irony, hybridity, and binaries. The concept of the cyborg implies a capacity to question and deconstruct binaries and norms. It is an expression of post-modernism because of its nature to be resistive of grand truths and meta-narratives. Historical binaries underpinning ideas of gender, race, status and others can be dislocated: this is the promise the cyborg offers.

In practice and reality, however, the cyborgian ideal may remain unattainable as it is itself reliant upon binaries to exist. It is still dependent on contexts and discourses, and the cyborg is still be trapped within binaries'[2]. This is because the cyborg is forced to identify itself with the binary that it resists. Ironically, the cyborg seeks to destabilize the dualism that gives it its very purpose and meaning.

This paradox is apparent in the digital arena. The internet, for example, is populated by individuals with multiple identities. Digital animation carries the innate objective to become more plausible and more 'believable'. Digitalization tests the boundaries of reality and fiction, and subconsciously tests the boundaries of humanity's social beliefs. The result of such testing, however, is not entirely romantic, but in fact exposes society's discomfort of such deconstruction. Digital films, with their tension between 'real' and 'virtual', are good examples of the cyborgian dilemma. Films like *Mirrormask*, *Sin City*, and *Beowulf* may vary in genre, but carry similar thematic veins. They feature alternative worlds, chimaeric 'living' creatures, and blatantly break down cultural barriers.

Mirrormask tells the story of Helena Campbell, a young girl who travels into her own dreams and drawings in a quest to save her mother as well as the Kingdom of Light. The setting of the film revolves around two worlds: The 'real' world, and Helena's dream world, which is constructed of her personal drawings.

The relationship between reality and fiction is critical to the film's narrative. The film's narrative and its other themes use the conflict between what is real and what is imaginary as its cornerstone. The fate of Helena's dying mother is reliant on the result of Helena's quest to save the Queen in her dreams. The dream is also dependent on the real world. When Helena finally returns to her own world and hears that her mother is declared safe, the subjective relationship between the 'real' and 'unreal' ceases to exist. The convergence of reality and fiction is merely temporal as the binary resurfaces.

The second film, *Sin City*, is set in Old Town, and deals heavily with the themes of gangsterism, corruption, and the reversal of morality's role in society: in particular, the discourse of prostitution.

The ideological position of Old Town's prostitutes is uniquely cyborgian. They resist norms and redefine power. Traditionally, the sex industry portrays female prostitutes as 'immanent, material, and passive, supposed to experience guilt and shame for possessing a female body'[3]. In this film, the prostitutes are the violators and dominators, possessing firearms and killing policemen. Such portrayal gives the prostitutes a dramatic and almost unreal shift in representation.

However, despite such reversal, the prostitutes suffer from the cyborgian paradox. The social reality that stigmatizes the prostitute resurfaces through Becky, a young prostitute. In two separate scenes, she participates in a plot to kill a cop, and betrays her own kind because she is ashamed to be a prostitute. The 'different' representation of the prostitute would not have existed without the traditional stereotypes.

For Robert Zemeckis' *Beowulf*, the contention between reality and fiction is slightly different. From a technical perspective, *Beowulf* is designed by Robert Zemeckis to be a 3-D animated film that appears extremely realistic, using motion capture technology to create life-like animation[4]. Technicalities aside, the release of this film generated heated debate about Angelina Jolie's character (the mother of Grendel), who appears practically naked in this 'cartoon' which children are allowed to watch (with parental guidance).

Angelina Jolie herself did not expect her digital self to be portrayed thus, stating that she was shocked by the reality of the film. The motion capture looked real, being virtually indistinguishable from the real person[5]. At the outset, the debate is about whether Angelina Jolie's nakedness is genuine, but the underlying discomfort comes from the film's effacement of what is 'real' and what is 'fiction', which treads on the moral grounds of what is acceptable for children. Sexual expression has never been blatantly tested in mainstream Hollywood animation until *Beowulf*. *Beowulf*'s cyborgian nature experiments with the boundaries of digital technology, and encounters a barrier via audience reaction. Viewers do not seem ready to accept a fiction that replicates reality so intimately, and appear still unprepared for the cyborgian freedom that is promoted.

Above is a glimpse of how these films help raise the question about cyborgism in the modern world. For this paper I have chosen the perspective that our society is transforming into a cyborgian world because of the increasing collapse between fiction and reality. Technically, digital films are extremely prominent manifestations of cyborgism and can give us a hint of where the world's heart is at.

But this transformation is not all smooth, and faces inevitable ideological resistances, as demonstrated by these digital films and their reception by audiences. These films are unique attempts to blur binaries and barriers, but this movement is faced with opposition from both within and beyond, as is the case of these digital films. As these films have shown, there are aspects about this collapse of binaries that society is not entirely comfortable with yet, in both thematic and literal forms. The next ten to twenty years will be both interesting and crucial for digital films as they seek to explore more intriguing and socially challenging frontiers.

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Deciphering Realities, Moving Frontiers

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The discoveries in biology about the organisation and function of the living are the basis of numerous technological inventions which open possibilities of direct interferences of humans on the living matter, including programming, transforming and creating living matter. This form of acting on nature differing from what we knew so far has been the focus of numerous debates and artistic creations, building thus a frame where different disciplines contribute to the advance of thoughts regarding the new ability to change life processes that were so far modified only through natural selection. This indicates that the ability of direct interference on living matter raises relevant questions in the fields of biology, philosophy, social sciences and numerous ethical issues. When the artist, manipulating life processes by using various approaches, weaves tight connections with life sciences, these different questions are intertwined and closely related. Theses approaches are tentatively defined as "*the coaching of biomaterials into specific inert shapes or behaviours; the unusual or subversive use of biotech tools and processes; the invention or transformation of living organisms with or without social or environmental integration*".[1] Thus artists are engaged in extraordinary complex creations, facing questions deeply related to the "creative-doing".[2]

Probably, by this new form of acting, are we transiting between our "real" and "fictional" constructions. The moving frontiers become more and more permeable and we are led toward a "creative-doing" linked to the complexity of the contemporary "doing" and "thinking" and whose specificity is closely related to the ability to act on life or living matter.[2] This "creative-doing" affects art, science, ethic, philosophy, etc.

Here, we evoke artistic and scientific practices involved in deciphering the "reality" while creating new worlds or ways to perceive it. This paper intertwines our respective artistic and scientific investigations from the exploration of the work "*In Question*", created by the artist and produced in collaboration with Hervé Guillou in an experimental and critic approach. "*In Question*" is part of the artistic project "*Perception intertwining*", initially developed during the artist residence in the Institute for Structural Biology. A first version of the work was shown at the Rencontres-I, France, 2007. This project started from the exploration of fading frontiers between interiority and exteriority and takes a look on life on the molecular scale. Here, elements from life, like proteins, DNA and cells are both expressive materials and basis for reflections for the creation of four different spaces: "*In Vitro*", "*In Vivo*", "*In Imaginarium*" and "*In Question*" interconnected by biological, cultural, imaginary and poetic information fluxes. In this project, the artist seeks to establish symbolic links starting from biological information, in order to give rise to new areas of questioning on the will to control, modify and create life. This project is inscribed in the complex relation established nowadays between art, biology and the society.

"*In Question*" is a work of cell culture on protein micro-pattern, in which the viewers can monitor at the exhibition place, by real-time videomicroscopy, the interaction of living cells with each other and with the protein pattern designed by the artist. The geometric shapes adopted by cells result from the constraints imposed by the artist and, also, from elements which escape our scientific control and complexity of the action of the living. These shapes amaze us and question our willing to control the living. A dynamic to be grasped by an "in between" biologic-social, natural-artificial, reality-virtuality and "amongst" several symbolic links. We propose here to weave connections between the presence and virtuality of science and the creation of "new possibles" by the artistic and scientific intervention.

For proper proliferation and development, living cells require specific interactions with their environment that trigger a network of metabolic biochemical reactions. The adhesion of cells onto a glass slide can be promoted by the immobilisation of proper extracellular proteins that switch on these metabolic reactions through highly dynamic interactions with cellular proteins. The development of microfabrication techniques allows the patterning of such proteins. Cell spreading on protein films is a process that involves stochastic cell membrane protrusions, transient interaction of receptors, possible stabilisations and reorganisation of the very dynamic cell cytoskeleton taking into account the new balance of forces. Figure 1 (left) shows single spread cells onto non-patterned and patterned substrates observed by fluorescence microscopy. The red colour is a stain for actin protein chosen for its function in shape regulation, addressing the dogma of form/function relation in biology. The green colour reveals the adhesive points that are macromolecular scaffolds. The blue is the trace of the extracellular matrix that was immobilised onto the glass surface. On the non-patterned surface, the cell organisation is complex and seems random whereas the patterning of extracellular proteins into a network of dots induces a simple geometrical self-assembly of the actin cytoskeleton. The observed shapes are images located spatially but also in time. Indeed these systems are in continuous evolution in a dynamic and stochastic sense. The evolution in time is an essential parameter of this living art work. A real living cell spreading onto an artificially patterned network of possible interactions seems to be stabilized, well organized and controlled. Sudden random fluctuations can drive the system into another state that explore new possibilities as it is seen in the bottom image where the cell escapes out of control from the previous shape contained into a square with a missing angle.

On the right part of figure 1, a population of cells was spreading onto a network designed by the artist to explore the possibility of organisation when the interaction between cells mediated by the VE-cadherin protein is crucial. The staining shows actin (green) and tubulin (red). Like actin, tubulin is a polymer organized in a network of dynamic filaments and plays an essential role in the transmission of signals and information within the cell. These information fluxes are similar to other fluxes that are the organizing forces of "out of equilibrium" systems such as living matter.

Figure 2 stresses the dynamic aspects of the organisation process and the question of the control of living system, here constrained by the protein network from the serie "PQ carré?" designed by the artist. The question asked by the artist and the scientist "why a square ?" is mirrored by cells dynamically filling the space. The diversity of shapes adopted by cells critically addresses the ability to control living systems, also questioning the field of possibilities announced by the techno-scientific innovations.

Figure 1: Fluorescence images of fixed cells. (left) single cells on a extracellular protein array. (right) "In Question", Lamelle 21. Regina Trindade, 2005. Detail.

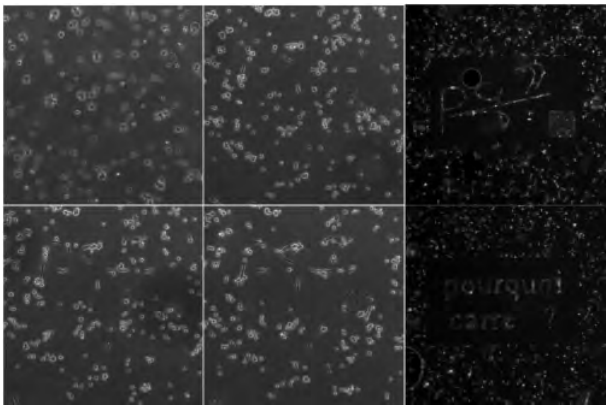

Figure 2: Time lapse images of cells spreading onto the "PQ carré?" serie (greyscale). Staining of the actin cytoskeleton on the "PQ carré?" serie (green).

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Writing, Creating and Knowledge in a Digital Medias and New Technologies Society (some problems and critics relative to old and new languages)

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Technologies and writing

All forms of expression, all languages, can now be produced or processed by digitalization. Thus writing as I intend it is affected, and creation along with it. Bernard Stiegler; the French philosopher of technology, says that computing can be considered a new form of writing. It is therefore necessary to understand the way these technologies function, how technè and logos are linked, what their logic is, and how we can use this new alphabet. The problem of data process languages is the one of double language.

The data process, by its digital component, creates a separation between the support and the surface: the programme that transmits the processed information and these data, is not from the same field of language. For example, a data process program of text or image keeps from discretly being a numerical system.

So, we have to do with a concomitant, double language, but from which the logic and the meaning are different and autonomous. The informationnal paradigm of each of them has got its own system. Their adjustment into the data process system is only a technological one, and not a semantic one. And there is no direct transparency for the computer user. It is a double language that acts as an internal way to the computer.

This situation is completely different from analogical technologies, which do not create the forms by themselves, but which record them and reveal them, or reproduce them, for example photography, cinema, recorder. Concerning the new technonologies, the internal process to make out signs, or the formal traces, is another of their specific aspects. This potentiality situates the signs, or the forms, into an own referential system. And this is at the interconnexion of the handling of the bits and its results that will be generated by the digital system.

Therefore, we can affirm that in computing and the digital, languages are juxtaposed — functionally, technically, and semiotically. Data is processed by programs, meaning thousand year-old representation systems grouped together with recent computer languages, and language-machines. How does their logic coincide? What makes sense or sensation? Is it possible to control these anachronisms? Does the machine's functionalism dissect or reduce the symbolic power of anterior languages? How can we work within these constraints?

So, the role of artists and authors is important, and I think it has to be close to the technological conception. In the situation and at the time of digital media, we have to consider the technical support of the writing in the relationship with the symbolic forms. It is necessary to elaborate a structure in order to create a specific and open system of writing. Thus, we have to pay attention to the history of writing systems and to look at its evolutions and changes. We have also to integrate in our minds that writing, I repeat again, has now a multimedia dimension. The physical possibilities of the material, and the digital, are some elements that have to go both with the writing, because they build the formal aspects, the representation, and, the meaning.

In this way, my position is not only an aesthetic critique, but is an input for a cultural politic in the field of the technologies and digital media, included in a communication and information society.

Heterogeneity of languages and social link

"In the postmodern era, sciences and technologies bring new languages that add to old ones." Another point is what Jean-Francois Lyotard had already termed in 1979 "the heterogeneity of languages" in computerized societies; it is what constitutes postmodern knowledge. New languages add to old ones. But, of course, nobody speaks all these languages, and there is no universal meta-language, and so, no universal knowledge. J.F Lyotard also considered that in a society in which communication has more and more place, and has become more evident,

the language aspect gets a new lease of life. He thought that the social link is emerging from language, and that the society to come has to practice with this element.

With NITC and the internet network moving into the time of globalization, consider this situation: is it possible to invent and create forms and ways to communicate, keeping alive the social link? Which kind of society can emerge from it? The technological link does not make the social link right away.

We have to organize the exchanges, their wording, and the structuring of the discourse, in order to continue to communicate. A new diagram of communication has to be thought, a new composition of the exchanges written. It means that we have to create new forms of sociability.

Since we are confronted with this diversity of languages, perhaps we must make them homogenous. In this sense, rendering something homogenous entails producing meaning from these heterogeneous fragments. It is a work of writing, created from polymorphic materials, and keeping symbolic wealth of each of them. We have to combine these fragments of wording and discourse in order to give birth to new forms of communication, new representation systems, and new ideas.

What Jean-Francois Lyotard called the social pragmatism is the ideology to see the appearance of a new wording: for an emancipation of the knowledge, for the preservation of cultural diversity, and facing to the simplification and standardization of messages by marketing and capitalist merchandising.

The struggle against the communication and information society power and hegemony can go by what Jean-François Lyotard named “the paralogy of the inventors”. He also said that a dialectic of languages particles is what refines our sensibilities and our differences.

According to that, cultural communities, singular attitudes and also artists’ work seem to be a failure to globalization of knowledge. In effect, it would be one of the stakes about the production and access to information, communication and knowledge at the time of global network: a diversity of cultural, historical, forms and levels of languages and symbolic representations that cross and respond in a “game of languages”, instead of an information highway with a unique sense. That is the way to find or keep the social link, in the movement of the spirit life and the creation. This is also a form of communication that makes participating society in its multitude, in the sense of what is exchanged and how it represents itself, instead of being considered as a consumer of informational products.

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After having worked in cultural journalism, she is currently working as an author, using different mediums of communication of language (radio, books, theater, audiovisual, multimedia...), and in questioning their function experimenting with creation that is specific to each. She collaborates with artists from different disciplines, in France and elsewhere (Japan, Italy, Morocco, Russia). She publishes some texts in poetry reviews, participates in festivals reading poetry, working with directors in theater, writing and interpreting her texts for sonorous creations, is invited to collective projects using electronic and digital technologies, and participates in colloquiums with forms of writing-NTIC as their theme. By founding the association Alphabetville in 2000, she has created a place of reflection around the rapport between language and the media, and tries to articulate the practice and theory by dialoguing with the artists, researchers and cultural operators involved (www.alphabetville.org). In 2005, she has directed and edited the collective book “New medias, new languages, new writings” and, in 2008, she collaborates to the publication of another collective book called “The poetics of the digital.”

Aesthetics of Play:
Locating the Ludic in Interactive Art

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The borders between games and art have always been blurred. Several theorists have made connections between art and play, from conceptualising the reception of art objects as an interpretative play (Gadamer) to arguing that computer games should be seen as an art form (Crawford). Phenomena such as interactive art on the one hand and ubiquitous games on the other make the connection between art and games even tighter. What is the essential difference between a game such as *Cruel 2 B Kind* and Allan Kaprow's 1967 happening *Self Service*? The most obvious difference is perhaps that the first one is termed a game while the latter is thought of as art. Does this difference in itself affect our perception of the phenomena? Kaprow himself realised that framing his works as play instead of art could make them more available to people, and more likely to affect people's lives. Could the act of framing them as games also make the works more "fun" to people, providing them with a more intensely engaging experience?

In my presentation, I will look at examples of interactive works of art that require the audience to engage with machines or technology much in the same way as we are required to when playing a computer game. Comparing these interactive experiences with the way intensely engaging interactive entertainment makes us forget time and place, I want to investigate further into the relationship between play and aesthetic experience and see if I can identify possible ludic elements in these works. My focus will be on one central characteristic of play, namely when it is experienced as "fun", or "intensely engaging", which, I want to argue, can be seen as the optimal state of play understood as a particular type of aesthetic experience.

My objective is to approach a definition of the aesthetics of play that applies primarily to the experience of play, and only secondarily to our usual perception of art. When Gadamer defined our aesthetic experience of art objects as an interpretative "play", a "movement to and fro" between ourselves and the object of art, a metaphorical, rather than literal, understanding of play is reflected. His metaphorical understanding of play nevertheless includes the notion of an autonomous co-player or adversary present in the situation, capable of giving us the sensation that we are being played just as much as we are playing. However, since it is all taking place in our minds, also this co-player or adversary is imaginative at best. Gadamer's concept of play, thus, points to situations that are playful only in a restrictive, metaphorical sense. In order to understand play itself as an aesthetic experience a more literal understanding of the term is required.

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Aesthetics as a Medium

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Virtual reality, telepresence, haptic devices, advanced networks and surround sound offer greater means to visualize the complexity of the world and create new conceptions of reality and identity. These new conceptions expand traditional aesthetic principles of art making into other dimensions in depth and time requiring new aesthetic principles.

This text describes the relationship between traditional and digital aesthetics in the virtual reality art project *Rutopia 2* built for the CAVE™ and C-Wall virtual environments. The project explores the aesthetics of virtual art in relation to traditional Russian folk arts and crafts such as wood sculpture, toys and the decorative painting styles of Palekh, Khokhloma, and Dymkovo (Figure 1). Their crisp easily recognizable style of expression is characterised by generalized outlines, crisp emphasized details, bright colours, subjects, materials, and forms. *Rutopia 2* generalizes those aesthetic principles and transmits their culture into virtual reality (Figure 2). The project studies how the aesthetics can affect the intuitive navigation, perception, and emotional experience of the user inside the virtual environment. Computer graphics techniques used for the real-time development of virtual artwork study how colors and shapes can influence and lead the navigation and interaction of the user in the virtual environment. The research of user's perception and emotional experience gained from immersion and interaction with aesthetics of the virtual environment teaches that aesthetics can induce and control emotional responses. The aesthetics of the virtual environment can be orchestrated to control the communicative power of the project, maximize a sense of immersion and ultimately "presence" in the virtual world.

Rutopia 2 describes a magic garden with interactive sculptural trees. It was conceived as a virtual environment linked to a matrix of other unique virtual environments that together create a shared network community. A series of 3D modular sculptural trees, each consisting of dozens of rectangular screens, appear in the main environment and serve as portals to the other linked environments. Users can "grow" three trees in the island world by moving within the proximity of each tree. Once all the trees are fully grown, their screens turn into windows each showing the view of the remote environment connected to it. The user can look through each of the screens to see remote worlds consisting of imagery found in traditional Russian fairytales and folk

Figures 1 & 2: Storyboard of *Rutopia 2* from original painting inspired by Russian folk arts and crafts (Left, 2005). Screenshot from the virtual environment in *Rutopia 2* (Right, 2007).

art. By moving his or her head completely through one of the virtual screens, the user enters the connected environments. The project implementation utilized OpenGL Performer, Maya, CAVElib™, the Bergen spatialized sound server and the recent improvements and advanced rendering techniques in Ygdrasil.[1,2]

The rich tradition of 2D and 3D art history informs the visual composition, technical and aesthetic evolution of virtual reality environments. Balance, color, repetition and rhythm principles expand into new dimensions in virtual reality and require more planning, work, development time, testing, and evaluation. In order to have a visually pleasing image the overall scale and the proportion of each element needs to be balanced. By connecting multiple elements through the same properties of color and proportions, one can effectively highlight the connective relationships. Because the human eye tends to lose concentration on details in the moving image proportionally to its speed the time-based moving image requires less detailed artwork. Looking at the fast changing images on the screen, we seek the familiar and common artistic features to understand the overall art style. Thus, each individual moving image must follow the overall style guidelines while permitting a lower level of details.

Color can be successfully used to guide the user by forcing the eye and mind to focus on a specific element, which can be placed in the environment so it contrasts in color or brightness with other elements. Therefore color can be used to influence and lead navigation of the user inside the virtual reality. The decorative patterns, bright colors, and simplified 3D shapes can enhance the intuitive navigation in virtual reality. The bright orange decorative roads painted in contrast with the dark terrain colors in *Rutopia 2* guide the user in the environment. They lead to the log house where the user receives the ability to fly and to the island where he can "grow" trees. In virtual space the element can be both static, while it waits for the user commands, and moving when it is animated through interaction. The compositional and color emphasis in the virtual environment is placed not only in three dimensions: depth, width and height, but also into a certain moment in the project timeline. This adds a need to control its impact range on a time-based sequence.

The greater potential of aesthetics in virtual reality is not only to visualize the objective similarities and recreate photorealistic effects, but also to provide interactive activities to discover the meanings of the artistic concepts. Virtual reality can embody an authentic aesthetic experience, sense of "place", unveil metaphorical meanings and manage feelings, emotions and perceptions to communicate conceptual context. It provides unique means to highlight and reveal the cause and effect relationships between meaning and the interaction necessary for deeper comprehension. This user-centered approach controls a user's engagement. Through navigation, interaction and user involvement, virtual reality can enhance the meaning of the experience, and foster discovery through exploration and sense of presence. In a networked situation, visitors can communicate with each other and collaborate on the discovery of metaphors associated with the concept of a project. Another new requirement for a new aesthetic is based upon their physical and psychological influence on the human body inside the virtual reality world. Body movement in the immersive environment can extend to the exploration of design in a more imaginative, unconventional and emotional way.

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The Electronic Visualization Laboratory (EVL) at the University of Illinois at Chicago specializes in the design and development of high-resolution visualization and virtual-reality display systems, collaboration software for use on multi-gigabit networks, and advanced networking infrastructure. This material is based upon work supported by the National Science Foundation (NSF), awards CNS-0420477, CNS-0703916, OCI-0441094, OCI-0225642, OCE-0602117 and DRL-0426328; and, the NASA ASTEP Program, award NNX07AM88G. The CAVEv and CAVElib are registered trademarks of the Board of Trustees of the University of Illinois.
http://www.evl.uic.edu/
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Tracing Things: Beyond Locative Media

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Locative media provides a democratic conceptual framework, by which to examine the certain technological assemblages and their potential social impacts, striving, at least rhetorically, to reach a mass audience by attempting to engage consumer technologies and redirect their power.

The Internet of things

According to the International Telecommunication Union (ITU), we are entering into a society of ubiquitous networked objects.[1] Soon, the ITU observes, objects will be the most prevalent users of the Internet, relentlessly communicating various kinds of data to each other. What does this mean for what the ITU calls the "Internet of Things"? Bruno Latour suggests that things are a focus for our time, in particular, a focus that demands the attention of the arts:

> "'Things' are controversial assemblages of entangled issues, and not simply objects sitting apart from our political passions. The entanglements of things and politics engage activists, artists, politicians, and intellectuals. To assemble this parliament, rhetoric is not enough and nor is eloquence; it requires the use of all the technologies — especially information technology — and the possibility for the arts to re-present anew what are the common stakes."[2]

We can get a sense of what Latour means by this by looking at "MILK," a project by Ieva Auzina and Esther Polak exhibited by Latour in his "Making Things Public" exhibit at ZKM that also won the 2005 Golden Nica at Ars Electronica.[3] The work of a group of Latvian locative media artists, MILK is clearly indebted to more traditional aspects of the movement in that it uses GPS trace-routes. But instead of seeking a phenomenological regrounding of the self, the MILK team traced the path of milk from its origins in the udder of a cow in rural Latvia to a cheese vendor in the Netherlands. To be sure, this project is still more suggestive than fully realized: MILK's artists are not terribly interested in Latour's reading and instead see their work more as a form of romantic landscape art. Nevertheless, MILK suggests a powerful vision of how locative technologies could allow one to more fully understand how products are commodified and distributed through the actions of global trade, thereby making visible the networked society.

Milk Project installation at ZKM, project by Esther Polak & Ieva Auzina, installation design by Ivar Van Bekkum, Mikelis Putrams and Mara Skujeniece.

Recently media artist Coco Fusco set off a debate of the net time and locative mailing list when she launched a headlong attack on new media practices associated with networks and mapping, claiming: "It is as if more than four decades of postmodern critique of the Cartesian subject had suddenly evaporated."[4] Fusco minced few words: "In the name of a politics of global connectedness, artists and activists too often substitute an abstract 'connectedness' for any real engagement with people in other places or even in their own locale." Here, however, Fusco's anti-mapping diatribe runs aground, for when tied to a materialist vision, the recent turn to maps is among the strongest critiques of globalization available to us. Recognizing this, philosopher Alain Badiou referred to the maps of power drawn by artist Mark Lombardi[5] as "the creation of a new possibility of art and a new vision of the world."[6]

In his book Shaping Things, Bruce Sterling suggests that we détourne the Internet of Things itself to become more fully aware of the ecological role of objects in the world.[7] Sterling coins the neologism "Spimes" to refer to future objects that could be aware of their context and transmit "cradle-to-grave" information about where they have been, where they are and where they are going. Cory Doctorow has called Spimes "the hactivist's ultimate tool — an evidentiary rallying point for making the negative outcomes of industrial practices visible and obvious so that we can redress them.[8] Similarly, even if it is not so much locative as suggestive of such practices, Natalie Jeremijenko's How Stuff Is Made project is something of a response to Sterling and Latour's theories, comprising a visual encyclopedia of photoessays produced by engineering and design students that to document how objects are manufactured and investigates both the labor conditions of that manufacture and its environmental impact.

Technology fetishism

If Spimes and their kin make it possible for us to envision new forms of cognitive mapping, we need to guard against using that mapping to only place ourselves, thereby reducing objects to a subservient position in regard to humans. After all, the ITU's prediction of tens of billions of objects connected to the Internet leaves human users as a distinct second. Here, it may be worthwhile revisiting our standard theoretical frames for interpreting technological fetishism.

If Marx considered the object as the result of alienation of the product from its production and, by extension, its origins, Freud understood it as symbolic replacement for an irrecoverable object lost in a primordial trauma. For both Marx and Freud, the aliveness of objects is nothing more than an illusion, and object fetishism merely a substitute to avoid. But, as Steven Shaviro notes, the fetish object is always more powerful than what it is thought to stand in for.[9] As an art practice, to date, locative media seems fundamentally tied to discourses of representation centered on a human subject, privileging the experience of the human in space (tracing) and time (annotative). To turn Fusco's argument on its head: in both locative media and much of the criticism launched against the movement, it is as if more than four decades of postmodern critique of the humanist subject had suddenly evaporated. Even MILK's project is not about milk, but rather about the people involved in the production and distribution of milk as it transforms from Latvian biological fluid to Dutch product.

In contrast, Sterling provides us with a darker, more idiosyncratic vision. Humans don't control Sterling's world of Spimes. On the contrary, it is an unruly object world in which people are, at best, "spime wranglers." At the dawn of the Internet of Things we have to wonder if we are not entering a world in which the object becomes sentient, thereby finally liberating itself from human bondage. If, in the Enlightenment, we learned that nature — in its role as background to human activity — had been replaced by human second nature, then today we are perhaps at the threshold of a machinic third nature. It is the task of whatever remains of art after the locative turn to get involved in the messy business of this new world of objects, even if the Utopian and critical moments that can emerge as a result are only temporary and contingent.

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Generating Virtual Environments for Playful Touch Interactions: Touch Terrain

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Abstract

This paper discusses *Touch Terrain*, a collaborative project developing a multi-participant mixed reality performative environment. We are invested in designing and choreographing experiential interfacings, that raise the stakes for the role of corporeality within hybrid domains. In a world and media arts dominated by audiovisual media, we depart from a reversal of the main static sensorial hierarchy of vision and sound, and instrumentalized touch and kinaesthesia, wanting to contribute to a more inclusive approach to immersive interactions. Following from a previous project, *Blind Date*,[7,8] we emphasize the role somatic and tactile senses in the construction of an embodied awareness of ourselves, one another, and the world, questioning how all the senses, feelings and awarenesses connected and affect our general mood.[1] With *Touch Terrain* we work on challenging participants to engage in a playful corporeal immersive experience that raises their awareness by destabilizing their autonomic/automatic sensorial and perceptive interconnections. Emeshing another technological interface, such as VR glasses, into the naturalized eye-body-world interface, and with it another (simulated) body and environment, we are interested in the information systems' possibilities to instigate awareness and deeper/joyful experiences of our corporeality, expanding embodied communication in less categorized/techno biased and profit driven ways. Thus, through various computer vision combined and connected systems — VR glasses, mocap sensors, data-gloves and webcams — the project is a challenge to address the body and embodiment out of univocally over-sexualized cultures of porno, sports, violence, publicity, and much art appeal. This paper discusses some of the crucial aspects in the ongoing creation of the work. How can we build such inclusive and playful hybrid physical-virtual-simulated environment, where vision emerges from and reverts to participants' tactile engagements? How can this investment facilitate (intelligent) inter-subjective embodied experiences, contributing to rise awareness about and change Cartesian and luddite attitudes towards our *posthuman condition*?[4] Will it raise the urgent agency towards embodied communication within intermedia environments, if only from the perspective of amplifying real life experience?

Addressing corporeal experience in immersive environments' choreographic design

Touch Terrain goes back to Melanitis' performance installation *Pleasure Machine*, in which a dancer with some VR glasses performed movements remotely instructed by a user manipulation of a sticky figure, in an ironic commentary of the master/slave model.(7, 8) Then, in *Blind Date*, our initial collaboration, this user/dancer imposing interaction was duplicated and expanded including the possibility of touch. With *Touch Terrain* interface research, the hybrid environment is enhanced by a 3D space and avatars (*Figure 2*), which participants can manipulate through their embodied and tactile experience.

In this effort to create playful as well as challenging situations out of VR and tangible and mediating touch interactions, *Touch Terrain* relates to renowned works, such as *Osmose* (Davies, 1996), *BodyMaps: Artifacts of Touch* (Schiphorst, 1996), *Telematic Dreaming* (Sermon, 1999), and *TGarden* (Sponge / foam, 2001). *Touch Terrain* attempts to complicate the crucial issues raised by such works. By combining of VR interfaces and computer vision systems applications, it further questions subjective and inter-subjective normative modes of human-computer-human interaction, mostly based on culturally constructed ideologies: embodiment, virtual/body image representation — gender, ethnicity, health and aesthetics.

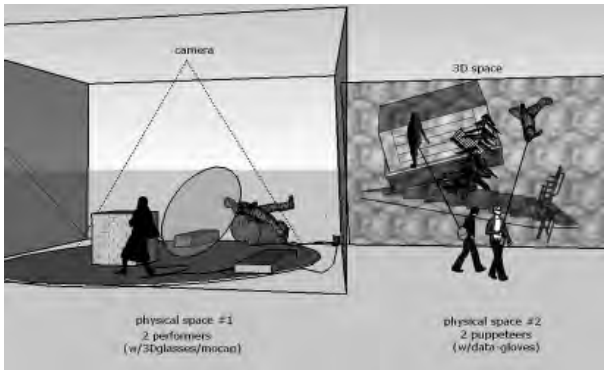

Figure 1: Environment design for Touch Terrain

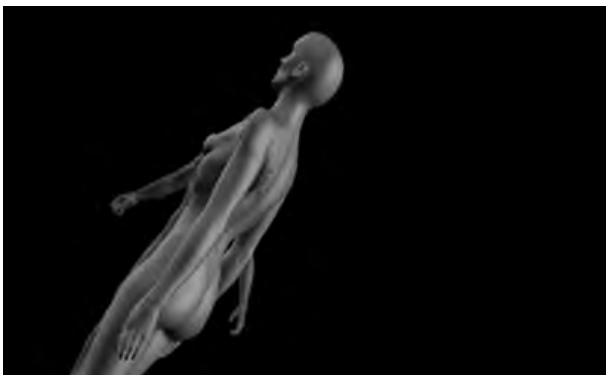

Figure 2: Avatar for Touch Terrain

Through isolating and recombining sensorial / perceptive relations in specific mediated interactions, *Touch Terrain* proposes other types of socializing situations which enable the enactment of hidden embodying possibilities, addressing issues related to both experiencing and representing our, other bodies and spaces/places as ourselves.

Like in *Blind Date*, the experience is projected for 4 participants, 2 performers and 2 puppeters in 2 separated though remotely connected spaces and physical interfacing situations. Wearing VR glasses, the 2 performers enter space #1 (*Figure 1*: physical space #1), seeing nothing but a small distant avatar within an empty VR space. This avatar is not their 3D representation, but that of the other performer in the shared physical-simulated spaces. Whereas they affect the movement of their avatar, perceivable only by the other, the 2 puppeteers are in front of a screen projection of the VR space (*Figure 1*: physical space #2) wearing data-gloves and playing with altering the avatars' visual attributes (dimensions, color, sex) by moving their fingers. Suggesting skin color, body fat, proportion of parts, we want that the puppeteers' (morphing) gestures put into play notions of mutable constructed bodies and subjectivities these biased identity and cultural features trigger.

Compelled to engage with the avatar, the only VR spatial reference, the performers will advance in space. Reaching, with their limbs, they will meet objects. These touched objects will generate their VR landscape elements. A galaxy of flowers might appear. Will they be distracted into a spatial engagement and moving them, as they loose visibility of the avatar with the appearance of these elements? Moving them out of the way they might get in physical touch with the other performer. Possibility which will bring them to see their own avatar. By keeping and prolonging this touch through time and body parts they will witness their avatar gaining shape and morphing (by the puppeteer). This experience inevitably addresses the cultural taboo associated with touch.

Mostly related to the childhood darkroom hide-and-seek game, where one player tries find and recognizes one of the other players through touch, in *Touch Terrain* the performers "are blinded" to the physical space, yet, this situation is chosen to purposefully heighten their kinaesthetic awarenesses and knowledge by physical touch and movement.

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8 http://people.brunel.ac.uk/bst/vol04/index.html

9 http://geocities.com/melanitis2001/home2.html

PING,
An Alternate Reality of Control

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A key issue in philosophical analyses of technology is the concern to conceptualize innovation. It could easily raise the question whether human beings are capable of truly creating something novel, or to what extent their future output is condemned to repeat past moves and previously defined technological possibilities. The question of innovation is even more pressing viewed in the light of archaic features of social behaviour, such as the primordial concept of 'gaming' that is dealt with by Huizinga in his study 'Homo Ludens'.

As he points out in this famous cultural history study; it is not only the prime recognition that human culture exceeds the realm of the physical, but also that 'gaming' as an ever expanding cultural fabric has to be recognized as the possibility of a rupture of what was previously known, understood and accepted. Game, or play, is a vital element of a culture that reinvents itself time and time again.

Gaming breaks, e.g. even in the animal world, the borders of the physically existing. It appears that gaming is a different social and cultural code that defies the powers and power structures that be. Reading Huizinga's theory anew it leaves no other option than the idea that we all have to affirm the notion that life is more than mechanisms that are endlessly repeated; and that for the existence of play it only suffices to understand that human life is more than only 'reasonable'. Human life is beyond reason.

Following that acknowledgement it is fair to state that game or gameplay emerges out of a sense or undeniable desire to 'probe a space of combinations'. It is for this reason only that no serious analyses of innovation and creativity can bypass or leave unaddressed the concept of play in all of its guises.

All future scenarios in the most divergent of traditions and attitudes, varying from stock development analysis to the analysis of the probability of surviving predator attacks in bird migration, rely heavily on probability and simulation studies, and in other cases, on game theory. In the era of the advent of the computer, the scientific field necessary for this quantum leap in human imagination seemed to converge in a cluster of related concepts that brought forth the promise of the 'modern society' with all its 'dreamed blessings', including the grim ones that have sorrily shaped modernism. These concepts circled around the ontological problem of how to predict and manage the future. The mathematical field of game theory proved to be a strong antidote to the relativistic sentiments that were stirred up by the developments in quantum physics, and simultaneously, the urge to control technological and economical innovation and progress.

Game theory opened a way to calculate fate, to measure uncertainty! In other words: it was the necessary fuel to the concept that the future could be designed! Not only economists relied in their research on the proceedings of technological forbearers such as John von Neumann, with his ground breaking game theory in its application to economics, and similarly for his concept of cellular automata in its potential to computing. But it was most notably ballistic specialists and the military who shared the deep recognition that for the maintenance of a 'balance of power', the work in this specific field of scientific investigation; the key to the enclosure of the future, had to be found. It is for this reason that von Neumann, as the prime source for this type of investigation, could not have been anyone else to organically engage himself in the activity of conceptualizing the bomb that was designed for the

destruction of the Japanese town of Nagasaki. It is the necessity that speaks out of these historic facts that makes it defendable to draw an almost causal line that connects the specialist field of game theory applied to the dropping of the A-bomb via the arcade games of destruction to the algorithms that produced the possibility of multiple virtual kills in Quake.

The simulation of reality became the cornerstone of a culture hooked on the idea that reality, even in its deviancies could be programmed. Stronger still: that reality is completely subordinate to its design: a game!

If culture has made it significant to think about its capacity to invent itself constantly anew, then gaming as a dominant cultural form becomes more telling and important to understand that culture. Or to put it the other way around: why not recognize gaming as the most appropriate way to conceptualize innovation! However, true innovation can only be conceptualized if it is based upon an open stance towards the future. Innovation can then be seen less as an activity for the realization of pre-defined possibilities, than the process of actualizing virtualities.

Designed to be played by two persons at the same time, PONG; the primordial video game of the early seventies (November 1972) was realized as a coin operated game by Atari, and met with great enthusiasm and recognition. A difficult interface would not have paved the way to its success. So the designers decided to come up with a game that could be operated by any drunk in a bar. Yet one could ask if anticipating the familiar is truly innovative, but it still opened a completely new field of entertainment and a truly innovative science: game design. It changed the paradigms of how to design. For it stressed the importance that for a game to be successful it needs to grant its players not only an alternate sense of reality but also the control on it. The control of PONG was highly simple: just one knob per player that you could turn in both directions.

It was this simpleness and yet its effectiveness that inspired students Eelco Wagenaar en Arjan Scherpenisse when they conceived their PING. Based on an assignment for a course project of DOGtime ID/UM, at the Rietveld academy in Amsterdam, their stance was similar to what the designers of PONG once faced: a player should immediately understand where the fun of a game lies. By making tennis or ping pong into a video graphical game was one step to help the audience understand the fun potential of virtuality. And unlike the currently highly popular game interfaces like the Wii, Wagenaar and Scherpenisse wanted PING to make a loop in the orientation: from analog to digital and back. This in order to instruct its users that simulated games are simulated games, and that you can also choose to play real tennis or ping pong. Yet it added another level of virtuality: the possibility of remoteness, playing real ping-pong with someone who is not directly present. The ‘quick and dirty’ but adequate solutions of the setup heighten the effect of a game that points to its structure.

As a final result of a rapid prototyping project it offers a strong blend of genres both virtual and actual, in a discretely innovative game that takes its player hostage to a media ecology that sketches the structure of how it has become a reality.

PING as a game will not disappoint the players; for it is completely unpredictable where the ball of the opponent will set its trajectory in the playing field. A game that not only makes you sweat, but a game that shows you exactly that gaming is not only a real experience: it is an alternate reality of control. Or should I put it more aggressively: an alternate reality to control?

Rewriting Contemporary Art History

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Abstract

This paper will briefly trace the early history of digital art and provide an overview of how it is taking its rightful place in international contemporary art history. The history of digital art goes back well over forty years with the creative experimentation of artists at research centers, such as Bell Labs and MIT. Access to early computer graphics systems was difficult and often required collaborations between artists and computer scientists. While there were a few seminal exhibitions in the 1960's, digital art experienced the first logarithmic growth period during the 1980s, when personal computers became widespread and available to artists. The establishment of organizations such as SIGGRAPH and Ars Electronica in the 1970s nurtured the creative use of computers and technology through annual exhibitions, conferences and publications. The second major growth period of digital art began in the mid-1990s with the emergence of the World Wide Web. Artists now had access to a global community to exhibit and discuss their work. Since the mid-1990s, museums and galleries have become increasingly receptive to digital art. A new generation of artists is emerging, one that has never known a world without computers and sees making art with technology as a normal part of the creative process. It is this new generation that will integrate digital art with contemporary art.

Early digital art history

Early computer art venues included the 1965 exhibitions of Frieder Nake, Georg Nees and A. Michael Noll at the Studio Gallery of the Technische Hochschule in Stuttgart, Germany and the *World Exhibition of Computer Graphics* at the Howard Wise Gallery in New York, which included A. Michael Noll and Bela Julesz. In 1966, Billy Kluver, Robert Rauschenberg, Fred Waldhauer, and Robert Whitman established "Experiments in Art and Technology" (EAT), an organization designed to bring artists and engineers together. "9 Evenings of Theater and Engineering" was held at the 69th Regiment Armory in New York and brought together over 30 artists and engineers in a creative collaboration. Two major seminal exhibitions: "Cybernetic Serendipity: The Computer and the Arts" at the ICA in London curated by Jasia Reinhart and "The Machine As Seen At the End of the Mechanical Age" at the Museum of Modern Art in New York, both in 1968, stand out as landmarks in digital art history.

Digital art organizations

Rather than fitting into the mainstream, digital art has been nurtured by international organizations through conferences, exhibitions, and publications. The journal "Leonardo", started in 1968 by Frank J. Malina, has provided an ongoing forum for digital art theory, history, practice, and the relationship and interaction between art, science and technology. The British Computer Art Society was founded in 1968 to promote the creative use of computers. The 1980s saw the establishment of the V2_: Institute for the Unstable Media (1981) and Ars Electronica (1987), followed by ISEA (1990), Canon ArtLab (1991), New York Digital Salon (1993) and Rhizome (1999). What these organizations, and many other newly established ones, have done is to fill the vacuum created by traditional museums and galleries that had not yet embraced this art form. Through their exhibitions, they are creating a living history of digital art that is accessible to artists, art historians, curators and the general public. In some ways, this "ghettoization" of digital art into highly focused groups has propelled its development. Along with this ongoing development, we are seeing archives being established for new media art through organizations like the Rose Goldsen Archive of New Media Art at Cornell University, DOCAM (Documentation and Conservation of the Media Arts Heritage) established in 2005 by the Daniel Langlois Foundation in Canada, the Database of Virtual Art, Whitney Artport and Rhizome, among others. The question then arises as to how this will evolve in the future. If these international organizations are providing for the archiving of digital art, how will they interact with and influence the collections of major museums and public institutions? One of the reasons digital art has not been assimilated into museums is the challenge that exhibiting, preserving and maintaining this type

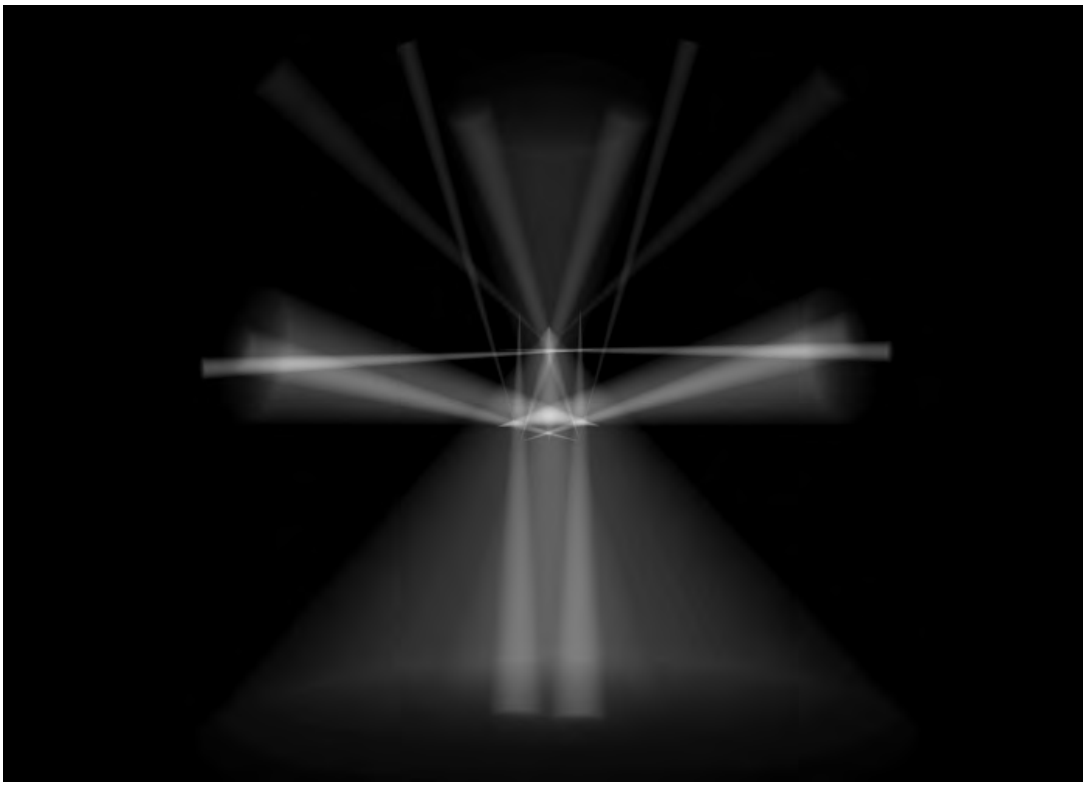

Figure 1: Bruce Wands, Buddha Light Painting 061507, 2007, digital print, 30 x 40 inches

of work presents. One current response is the Variable Media Network, a collaboration between several arts organizations, including the Guggenheim Museum, Franklin Furnace, Rhizome, Walker Art Center and the Daniel Langlois Foundation. This project pairs artists with museum and media consultants to explore ways of preserving art created with new and ephemeral media. As we move forward, hopefully, museums and public institutions will begin to add these works to their collections, as well as incorporate them into their exhibition programming. One interesting example was the "*Visual Music: 1905 — 2005*" exhibition at the Smithsonian Hirshhorn Museum in 2005. This exhibition traced the history of visual music up to the present day, and included computer animation by Larry Cuba along with analog and digital computer animation by James and John Whitney.

There were only a handful of books published on digital art between the 1960s and 1990s. In 1971, Herbert Franke wrote *Computer Graphics — Computer Art*. Other books include Ruth Leavitt's *Artist and Computer* in 1976, Cynthia Goodman's *Digital Visions* in 1988 and Frank Popper's *Art of the Electronic Age* in 1993. Recently, publishers, such as the Leonardo Book Series with the MIT Press and Thames & Hudson, have begun to produce numerous books on digital art. As more books are published, the foundation for the history of digital art is being laid.

In contrast to physical publications, the Internet contains vastly more information on digital art, from the actual work itself, to archives, online magazines, discussion groups, critical essays, etc. The volume of information

on digital art that is online dwarfs what has been printed. Is this the wave of the future? Are more and more publications needed, if the information is readily available online? While these recent developments are welcome, there still exists a vacuum of documentation and information about the relationship of digital art to contemporary art history since 1960. This is one niche that books can fill, as well as the development of websites that focus on the history of digital art, such as the CACHe Project in the UK and the Digital Art Museum in Berlin. A clear unbroken line needs to be drawn that traces the history of digital art and the artists, curators and writers who helped to create it. We now have a generation of artists who have grown up in the digital age and do not see making art with technology as unusual. However, significant historical and research tools for these artists have only appeared in the last decade.

Conclusion

Given the increasing use of computers and technology to create, exhibit and document digital art, the future looks bright. A new generation of artists has adopted digital tools as part of their creative palette and the mainstream art community and media are seeing this as a natural progression. Where the gap lies is in the proper documentation, preservation and contextualization of early digital art. While this is happening online and in publications, it is hoped that future editions of established art history survey texts will include digital art pioneers, allowing them to take their place in contemporary art history.

Figure 2: Jeremy Gardiner, Purbeck Light Years, 2003, Immersive virtual environment with large-scale projections

Virtuoso Audiovisual Realtime Performance

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Introduction

Fragments of memories produced both by human beings and by computer generate a synaesthesia of sounds and visuals. The sound of live instruments serves as an interface in an audiovisual interactive concert that merges acoustic instrumental sound and realtime computing into an improvisation. With the combination of intuitive improvisation and realtime computing, we want to create a synaesthetical artwork in which all audio and visual parts contribute equally. While visual images and processes are being generated during the concert, a multichannel granular synthesis fits together minute tonal particles that make up the instrumental sounds into a constantly changing acoustic stream made up of different pitches, durations and positions in the electro-acoustic space. The musical and visual components interact and reciprocally influence each other in order to blend into a unique, synaesthetic, improvisational work of art.

As different forms of machine musicianship are blooming nowadays, we are focusing on a very specialized form of realtime performance with a computer system: virtuoso audiovisual interaction with musical instruments. In this article we describe the development of our own audiovisual realtime computer system and document performances with different kinds of musical instruments. The goals of this project are to create an interface for visual and music computing for an associated audiovisual composition and to create a performance of equal participation of sounds and visuals.

Computer — The Hyper Instrument

The software system created in Max/MSP/Jitter consists of a pitch and dynamic detection, realtime visual processes and a live multichannel granular synthesis with special controlling and performing methods

Figure 1: Graphics in *The Colours Of A Wooden Flute*

while the musical instruments are played in the style of contemporary composition/improvisation. All computing devices, the audio detection, the visual and the audio processing are linked via a wireless LAN to influence each other reciprocally.

The multichannel granular synthesis processes the instrumental sound in realtime, spreading its sound on an eight channel sound system, rearranging those in terms of pitch, time, order, playback direction and position within the acoustic environment. For the visual processing we developed a patch in Max/Jitter called *ModularFilter*. It either takes a live video input, for example the performer, or some prepared pictures and movies as a source for further visual processing.

There was always a desire to stimulate the brain by a combination of audio and visual effects: for example, the light of coloured glass in the strong acoustic of churches, light organs, simply hooked up by frequency response, in the disco music era up to today´s high-tech audiovisual shows of popular music events, and countless more examples of contemporary artwork.[1,2]

Our approach reflects the same desire of making sound visible and visuals audible, but differs from the approaches described above in following issues: to make sounds and visuals of equal importance in a performance, to create a virtuoso associated audiovisual composition/ improvisation in an electro-acoustic space and to play the computer as a hyper music instrument.

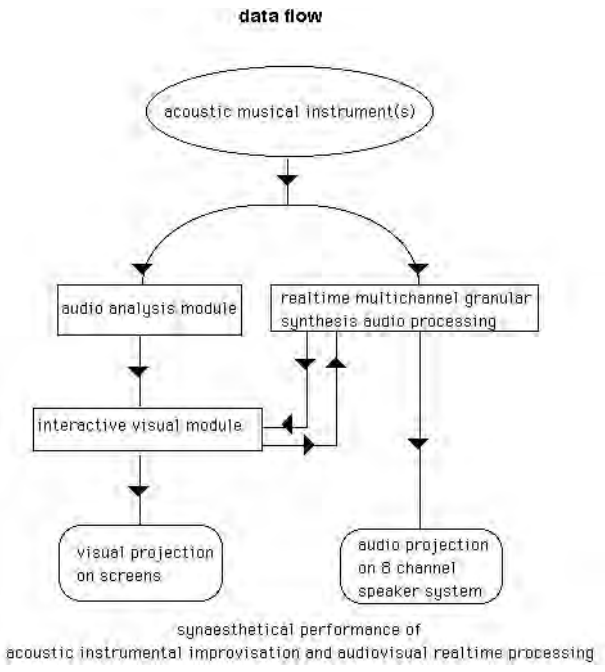

Figure 2: The overview of the data flow

The interaction is multiple: Three modules of our computer system, the audio analysis, the multichannel granular sound synthesis and the interactive visuals, interact with the performers, who are an acoustic musical instrumental player and the electro-acoustic hyper instrument player. The computing system is exchanging data between analysis, audio and video computing for a two-way digital communication. The mapping of this data, of course, is an important decision made by the artists. Last but not least, there is interaction happening between the musician and the granular synthesis performer: as usual in a musical improvisation, the musician and granular synthesis performer react to each other´s sounds and both to the computer aided creation of the visuals.

Musical instrument as interface

The acoustic musical instrument is not only acting as a musical instrument, but also as an interface for the computing system. We performed with different musicians with modern western instruments as well as Japanese, Korean and Chinese traditional instruments.

The acoustic musical instrument is controlling the creation of the visuals in realtime and the instrumental sound will feed the granular synthesis distributed on eight channels depending on the live performance. In our experience also the architecture of the concert hall or the performance space has a strong influence on the sound and interaction, as the loudspeaker tends to feed the processed sound again into system through the microphones, which we sometimes emphasize as a special effect.

We used various instruments as audio input and controlling devices in performances worldwide: The audiovisual realtime performance *The Colours Of A Wooden Flute* is performed by a bass recorder, which is

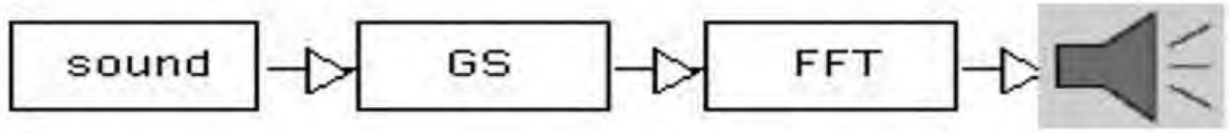

Figure 3: One channel realtime audio processing with FFT filter after granular synthesis

a wooden flute with a very low register and a smooth sound, using contemporary playing techniques like multiphonics. We use an arco-piano and our audiovisual interactive computer system in the improvisational performance *Interlude for Pi and for Io*. Arco-piano is a special contemporary technique of performing the piano with hairs of bows, which gives a very sophisticated sound of the piano. As these instrumental sounds naturally have a very long sustain we implemented a dynamic threshold system to avoid multiple triggering In marked contrast to this we performed with a yang-qin, a traditional Chinese hammered dulcimer with a near-squared soundboard, which has strong attacks and a short sustain. Together with our computer system it represents the performance of *Erinnerung in jedem Laut.*

Conclusions and Outlook

We have already combined the multichannel granular synthesis with other filter functions. For example with the utilization of FFT filter (Fast Fourier Transformation) after the multichannel granular synthesis we can approach very delicate accentuating effects i.e. some specific frequency will be punctuated and some will be softened, especially as these effects are moving differently in all eight channels.

Currently we are working on extending the system for a chamber ensemble or a group of instruments. We plan to separate the granular synthesis as well as the analysis functions and link the parameters of individual instruments to form a complex visual response to a live audio event.

Recently we introduced an interactive score that will conduct the ensemble.

We also hope to develop a system in which the visual events cause reasonable audio responses, to achieve equality of both the audio and the video domain.

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URL: Atelier Avant Austria, http://avant.mur.at

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Serious Play: Counter-actions and Interventional Dissent in the Game Space

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For some time now, the art-world and the video-games industry have occupied distinct spheres with a level of mutual antagonism. In 1982 Chris Crawford made the ambitious prediction that, "Eventually, games will be recognised as a serious art form."[1] Over the last decade the distinction has indeed been dislodged. Gaming is not only gaining greater credibility in and off itself, it is also becoming a site and medium for artistic practices and new forms of political art. Political art interventions within pre-existing game spaces often employ subversive tactics, what I call *counter-actions*; "To act in opposition to; to hinder, defeat or frustrate, by contrary agency or influence,"[2] to subvert through inversion. Counter-actions break with previous actions; they disrupt a previous understanding; they work literally *counter* to the play action. The play time and space of pretence becomes pierced by an element of the external world; an element which is not complicit with the legitimate state of play. As a result, when art enters the game-space as a political interloper it does not receive a warm reception. In Crawford's prediction, the term 'serious' butts against the assumed playfulness of play and through these counter-actions it is here argued that seriousness is reaffirmed in alliance with play to realise the concept of 'serious play'.

Velvet Strike: Counter Military Graffiti for CS (2002), by Anne-Marie Schleiner, Joan Leandre and Brody Condon and; *Dead-in-Iraq* (2006), by Josephe DeLappe are such counter-actions. Both respond to the war on terror and contravene the propagandistic nature of military simulation games. Both involve players entering a game space with intent contrary to the play action. In *Velvet Strike* players are enabled to spray graffiti tags of counter-military messages onto the various environments of *Counter-Strike*. In *Dead-in-Iraq* DeLappe enters the streets of *Americas Army* as a 'neutral visitor'. With the user name 'Dead-in-Iraq' he takes on a counter-active stance of stillness — a sitting duck — in a space of action. He then appropriates the messaging function to type the name, age, service branch and death date of the entire service personnal who have died in Iraq to date.

In both projects these actions have a predominantly negative effect on the majority of gamers.[3] The last thing many gamers want to see garnishing their game-scape is the slogan 'Hostages in Military Fantasy'. Their irritation is evidenced in the flaming reactions; "what you're telling people to do will ruin the 'experience' for all who play and pay for the game,"[4] framing the *Velvet Strike* team, with their dissident tags, as agent provocateurs. Social commentary is an unwanted stranger to the play and for Dead-in-Iraq the player responses also testify; "Dead-in-Iraq shut the **** up!" and; "Why should we care if an American or two dies."[5] The *Velvet Strike* tags act as offensive visual pollution and *Dead-in-Iraq* is the unwanted town crier to a population who refuses to hear the news. The recruitment strategies of *Americas Army* are more easily absorbed than a political statement from a player refusing to concede to the underlying rules of the game (this is a negative alliance). Such a player is a spoilsport and treated as such — with as much disdain and/or disgust. He is repeatedly shot and his perpetual reincarnation — like the structural repetition of trauma itself, stands in stark contrast to the reality of death which he is calling attention to. These counter-actions threaten the 'sense of carefree pleasure', inconsequentiality and freedom from moral responsibility, by the inclusion of content which runs in a contrary direction to the immediacy and continuity of the gameplay (serious play). *Velvet Strike* is a reference to the 1989 'Velvet Revolution' in Czechoslovakia; in which the communist government was peacefully overthrown. The point of this project and *Dead-in-Iraq* is not so much to 'overthrow' the genre, but to gently intervene and surreptitiously subvert the ideologies of virtual combat and their increasing convergence with realism.

Counter-actions establish the game-space as a public arena that holds the potential for alternate meanings to be generated. In this case they draw attention to a global climate of increased militarism hinging on the war on terror. Through such strategies a glitch occurs in the continuous space-time of the game that jolts the player

to a zone unfamiliar to that of play. In optimal terms this 'zone' is a 'think-space', as described by Lee Shuen-shing.[6] However, even though the already converted nod in approval, thought may be negated — as players curse in anger. While the tags of *Velvet Strike* and memoir of Delappe ferment discontent and accusations of 'ruin', they endeavour to act as a deconstruction of the fantasies at play within the militaristic context. To an extent they succeed, they turn the medium upon itself, holding a mirror up to its ideological aspects and all-too-real pretence. Their actions draw the art and game spaces closer together despite the critical risk of the alienation of the indigenous data-inhabitants. Tiffany Holmes argues that the art game "challenges cultural stereotypes, offers meaningful social or historical critique, or tells a story in a novel manner."[7] Counter-actions such as *Velvet Strike* and *Dead-in-Iraq* focus on the former of these capabilities; mobilising seriousness in play to enable alternate and most significantly dissident voices to be heard within *Americas Army* and *Counter-Strike*. In such projects space is created for the emergence of a difference within the repetition, homogeneity and precession of stereotypes characteristic of the majority out-put. They comprise a valuable counter-aesthetic to the dominant ideological drive of the mass-market gaming industry. Successful or not, they provide an antidote to this ideology, as well as an alternate means of communicating serious issues and provoking thought and debate at the nexus between the real-world and the language of play.

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3 While contemporary art curators are pleased.

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For Interface, Against Regression!
An Exploratory Surgery of a Transhuman Umbilical Cord

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Introduction

This paper aims to criticise utopian expectations of computer game interfaces' ability to disembody the player or create virtual subjectivities entirely outside the meatspace, the flesh-and-blood reality populated by physical beings. Instead, it aims to show that transhuman existence has already been achieved by computer games which, by enhancing physical bodies with game interface elements, helps players to reach digital simulations through their extended bodies. In so doing, the paper suggests interface elements as senses of a human body. The interface forms an umbilical cord through which new senses are enabled and existing ones limited in the gaming situation. Transhumanity is understood as an evolutionary transition towards a higher state of humanism achieved with physical and/or mental augmentation.

Senses in play

Recent years have witnessed computer game interfaces that attempt to evade their intermediary position between the player and the game and "immerse" the player "directly into" the game. These developments may be driven by the idea, originating in the HCI community, that the interface exists to facilitate fulfilling tasks and does not have any intrinsic value apart from its instrumentality. The interface can also be seen as standing in the way of "immersion".

For greater immersion, audiovisual capabilities have traditionally been extended with "rumble packs", "force feedback" and dedicated interface hardware such as dance mats and electronic musical instruments. Recently *WiiFit* has integrated balance into the sensory toolbox of game artist, and Philips *AmBX* is supposed to integrate smell. But even if seeing and hearing are accompanied by balance, touch and smell, "entering into the game" is haunted by an issue hard to overcome. Tomas (1995) raised the question of "how to exist in an environment that consists of pure information?" and in answer argued that the human organism needs to be transformed into "a pattern of pure digital information". However, the player is a carbon-based lifeform having no apparent way out from meatspace in the near future.

For Merleau-Ponty (1962), the issue is not about existing in space or time, but about inhabiting both time and space. This inhabitance is carried out by the operational intentionality or the basic "intentionality of the body-subject"; "the concrete spatial direction of an attitude or posture" towards an object in the world (Reuter, 1999, 72). Thus to inhabit a computer game the player has to be able to perform her embodied intentionality, or, motility, in the game. The most important thing that the game interface can facilitate is this particular inhabitance of a computer game player within a new information environment, not any of the individual operations it allows the player to perform on the game. The interface is a surface allowing two parties of fundamentally different kind, the simulation and the human player, to communicate with each other. The interface and HUD elements are significant, as they relay and aggregate information that is relevant within the "closed circle of meaning" of the game/play, (cf. Gadamer 2005, 112) but which the meatspace senses cannot necessarily grasp from the mere diegetic representation.

Experiments like *FeelSpace* belt (König et al., 2004) demonstrate that the sensory repertoire of a human being can be transformed with technology. The interface and HUD elements reconfigure the body of the player

and enhance the sensory system so it can cope with the challenges presented. We can speak in a McLuhanian or transhumanist sense, about enhanced humanity. Whereas transhumanism usually relates to a "higher" state of a human body and radically new and better capabilities of physical beings (such as anti-aging and cryogenics) computer games offer an everyday involvement of technology in extending human capacities. The transhuman player in the context of computer games is a mundane cyborg; a player who has inhabited an environment consisting of information with the help of new senses that provide her information about this new environment.

The sensory system of the transhuman player is composed of all the individual interface elements available: for example, minimap as an extension of bodily sense of direction, healthbar indicating the state of basic needs, and visual flickering around a distant character replacing the aural indicators of an approaching enemy, each corresponding to one or more competences of how the transhuman body can perform its embodied intentionality in the simulation. The interface is an umbilical cord through which, in the gaming situation, new senses are enabled rather than the existing ones limited.

In Merleau-Ponty's view (1962, 213), what we call "vision" is "a thought subordinated to a certain field, and this is what is called a sense". Furthermore, "visual field" denotes the "access to" and "opening upon" a system of visible beings that are at the disposal of one's gaze with no effort made on one's behalf, only by reason of one's position in the world. The player of *Tetris* (1986) has an "opening upon" the simulation not unlike Merleau-Ponty's notion of visual field; the interface element providing the information about the form of the next block to fall from the top edge of the screen is an exo-prosthesis, a transhuman sensory organ, whose field is defined in relation to the inner workings of the simulation, it extends one block beyond the current one the player is dealing with.

No, you are not me, Mario!

Transhuman players should be the true target group of computer games; they can be presented with challenges the overcoming of which requires skills and abilities that are not available for those operating solely in the meatspace. It is important to note that even though their abilities have been extended to the virtual, their bodies have not become any sort of obstructions or the players themselves "disembodied"; the sensory stimuli originating in the virtual reaches its presentation through rays of light reflecting on the retinae, and commands are given by muscle movements. We agree with Stelarc (2007, 456-457), that "information is the prosthesis" but as long as the body it "props up" is a human body, which, like Pepperell (2003, 20) notes is "fuzzy edged" inasmuch as it "cannot be separated from its supportive environment for any length of time without coming to harm", it is not an "obsolete body" (Stelarc 2007, 457-8). For example, a Korean cyber-athletics team has a chef of their own, who cooks dishes from ingredients that are known to be beneficial for those parts of the human body that take the most strain in the activity of computer game play.

The temptations of games with "transparent interfaces" are aimed at those who refuse the enhanced sensory repertoire. These games do not make use of the full range

of capabilities of the computer game medium and seem to resemble interactive narratives instead of simulations. If the player is not given the possibility to sense what there is in the environment, it is impossible to offer him abilities to act within the environment.

In games with so-called "transparent interfaces" the player is forced to suspend her disbelief and accept that the diegesis consists of representations which, when compared to the meatspace, are crude regardless of the state-of-the art technology involved. Even with disbelief suspended, the player can only act "as if" it was her own unique body that was reaching towards "the world"; the universe into which we can plunge through "transparent interfaces" is more fictional than virtual (cf. Aarseth 2005) and our own particular plunging is not necessarily in any way different to the millions of other similar "plungings."

Understanding the player subject as a transhuman player relieves one from clumsy attempts to bridge the unbridgeable gap between information and flesh (avatars, disembodiment). As such, a transhuman computer game player is a perfect example of the anti-cartesian model of being: imagination and technology is used in order to create a new enhanced body which is therefore able to act within a space and time different from meatspace. It is often forgotten that it is a fundamental quality of the computer game medium that "avatars" are primarily features of the interface, and the true subject body is that which is constructed by enhancing the physical body's abilities into the virtual through the interface. Only as interface elements avatars can be personal in the same way that for example one's limbs are personal.

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Notes on Nation Building

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Eleven years ago, in the summer of 1997, I attended a conference at the MIT Media Lab about the intersection of education, technology and economic development. I was 20 at the time and was thrilled to be at the east coast epicentre of dotcom culture. There were educators from all over the world at the conference, as well as a small handful of young digitally savvy youth, of which I was a part. I was savvy at the time.

The conference held sessions on a wide variety of topics. There were keynote speeches, and breakfast and lunchtime conversations as you might expect. Educators from Africa explained that integrating digital technology into education was difficult when so many communities lacked electricity. Most Africans at the time had never even placed a phone call. This was news to me.) Educators from Costa Rica showed pilot projects where new technologies leapfrogged existing ones while promoting new models of learning; American researchers discussed how to better support student-centred-learning both abroad and locally.

Although many at the conference seemed to be focused on looking for funding, I remember one schoolteacher in particular who was just happy to be there and to share his experience. He was from a small village in the Canadian arctic and he enthusiastically described how an intermittent satellite data connection allowed his students to learn about other places and cultures through direct communication with children in other parts of the world. It was a complete shift in his community where kids suddenly became the bearers of great knowledge and could themselves become teach their elders.

The conference went on for a few days and it gradually tempered some of my previous attitudes. In amongst the all the technological determinism that I was so familiar with from the business world was a healthy dose of scepticism. I remember being struck by the idea from one African school administrator that child labour was actually very much a good and necessary part of life in his community. He complicated my previous notions of how and why the developed world provides aid to Africa.

Although much discussion was had about educational philosophies, very little concrete action was emerging. At one point Nicholas Negroponte (the founder of the MIT Media Lab and the host of the conference) brought the group of young delegates into the boardroom. “This conference is all fine and well,” I seem to remember him saying, “but you should understand the potential of this moment. You are the youth representatives here. This conference is about you. We have the resources of one of the top research labs in one of the best-funded schools in the most powerful country on earth at our disposal. Let’s do something with it.”

We sat in silence.

He encouraged us to brainstorm and ideas began floating around the room. We could connect cultures together on the internet. We could promote harmony through technology. Negroponte wasn’t satisfied. He wanted something more. Something bigger.

“You guys should create a country.”

More stunned silence.

But slowly our minds began to churn. Among the youth in the room, we represented the national identities of Canada, Ireland, Poland, Italy, the US, South Africa, Japan, and France. Intuitively, the idea really appealed to us. What teenager hasn’t felt silenced or misheard? What kid doesn’t feel like they live in a completely different world than their parents? We had just been handed the keys to our rich uncle’s Porsche and we were flush with possibility.

So we started sketching-out what our country might look like, and how it might work. It would be a country whose citizens were children. In fact, we thought, why not make all the children of the world automatically citizens of our country? We could enable this with the connective technologies of the Internet and backed by... backed by what? And what is a country anyway? The questions that emerged were as exciting as the possibility that we

might be able to define some answers and actually make this happen.

More questions began to emerge. What would the boundaries of this country be? Who is a child anyway? Is there a universal definition? Should each local culture set a definition? How could you identify someone's age and their identity online? What about places without access to computers and Internet? What about privacy and individual freedoms? Do children even want political power anyway? If so, would the country have a flag? A currency? What would we call it?

We were buzzing with enthusiasm and spent the next year developing the country, which we called *Nation.1* (although an alternative suggestion, *Nation1.0*, may have been wiser). We gave speeches at the Massachusetts State house and in a broadcast to the United Nations. We announced the country in Wired magazine. I learned how to administer a UNIX server that would become the only physical territory of the young country and the epicentre of our online conversations.

However, our young committee gradually lost steam as we stumbled through our massive task. We eventually handed the project over to a new group of young digital entrepreneurs who morphed Nation.1 into a more active and realistic project. Nation.1 made significant contributions to other youth empowerment movements already in play at that time and eventually merged with a larger, financially established project called Taking IT Global.

Although I stepped aside from our nation building effort to let a younger (and thus more native) group take control, the project uncovered a whole world of ideas the remain fascinating to this day. What are countries? What does sovereignty mean? What is an economy? What is money? How do people identify with their own nationality and the nationality of others? What gives each country its legitimacy? When did nationalism begin? What is it for? How is it misused? Do countries still matter?

Many of the unimplemented ideas for Nation.1 remain objects worth revisiting, such as its voting system. All countries need to make decisions, so Nation.1's system was to be not only be a democracy, but the most democratic democracy ever. A super-democracy. We, the young mailing list members of Nation.1, would act as the interim governing body until a formal system was in place. We considered that Nation.1 might not even have formal politicians, just software governing the production of laws. All citizens might have access to create questions and vote on their answers. The priority of questions themselves could be voted on. We considered the use of proxy voters to take the role that politicians have in most societies today. Citizens would loan their voting rights to proxy voters for the sake of efficiency. There would be no four-year election cycle. Elections would happen continuously as often as there were questions that needed voting on, and as often as any citizen cared to participate.

John Perry Barlow, the co-founder of the Electronic Frontier Foundation, piped up at this point and spoke about President Franklin D. Roosevelt's inaugural use of opinion polling in governance, and the pitfalls of that approach. Barlow put in his support for a consensus-based approach to decision-making. I just couldn't grasp what he was saying at the time.

Our ideas for the technology of Nation.1 revolved around the use of mailing lists, discussion boards and translation systems. Alan Kay suggested using a wiki to enable collaborative authoring of Nation.1, which I can see now fits perfectly with Barlow's emphasis on consensus over majority rule. This was three years before the start of Wikipedia. I ignored Alan and am I ever humbled by that mistake. When the inventor of Object-Oriented Programming and the Graphical User Interface gives you technology advice, don't question him: just listen.

Besides the architectural components of Nation.1, I wonder about the general notion of youth involvement in politics. I remember being so fervent in my own

ideologies when I was younger, but these days I wonder about how youth are used by adults for political ends. I wonder about how they have been used in politics historically and how the line between guiding children and using them for ulterior gain must be quite fuzzy. Children became significant agents of change in the second half of the twentieth century in their targeting as a legitimate market segment by advertisers. That targeting produced both a rise in purchasing power and in social leverage.

But perhaps children have always been agents of change in one way or another. Either way, it is worth noticing children who speak the well-rehearsed words of adults as well as noticing children who exhibit more assertive free-thinking, inquisitive spirits.

As a part of my research into this paper, I spent a lot of time reading through old email messages. This one forwarded from Negroponte remains particularly significant:

> Dr. Negroponte,
> Greetings from San José, Costa Rica. I did wonder on the consequences of having a world run by children through the Nation 1 model. I do believe children had the best chance of making a better world now than before. Not only because of science or technology. As professor and father you should know, why children need healthy parenting to learn, grow, feel and think. As Christian, I believe God expects us to be like children. Not grumpy, hurt or sad children, but good will, open and healthy whether physical, mentally or spiritually. To devise a nation with children under a project run by adults look to me suspicious. Think about it! You mentioned Okawa, president of Sega. Do you know one of his best toys is concerned with death and destruction an used widely by children who from time to time reproduce crudely the behavior learned by playing such video games?
>
> Nation.1 looks like a byproduct of guilt or remorse from those responsible for reproducing violence and conflict without peaceful resolution. If the adults helping out the project do believe in children, let´s ban high tech toys submerged in violence, death and crime. That would be the best sign this is not just another manipulation of children, like those festival of the youth raised to the level of sacred on the former eastern block. Let´s take children seriously. Help them to learn good values and be free from fuzzy consumption and moral defeat.
>
> Sincerely
> Juan Carlos Flores, M.A.
> Father and son

The project of Nation.1 contains within it many important ideas relating to the present and future conditions of governance and the role that media and technology have to play in shaping future generations. This paper is just a starting point for further discussions, investigations and actions. Nation.1 was an effort in nation building whose history holds imaginative tangents for network culture as well as efforts towards the universal suffrage of young people everywhere.

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SITE-seeing: Image Geotagging and the Vernacular

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Tourist Photography's implication of physical freedom is being pushed to a new level by the growing popularity of Global Positioning System (GPS) Image Tagging, or Photographic Geo-referencing. Digital photography and camera miniaturization have continued the "liberation" of snapshots. Furthermore, the intertwining of the visual with the vernacular has purposed the earth as a surface for the inscription of every-day images and texts. In images of this sort, geospatial data often exists in paradox with the sentimental photographic object. Participatory online media projects have highlighted these paradoxes by presenting an unedited barrage of public submissions from all over the world. Many locative artworks have tended to collapse these notions, presenting somewhat singular, subjective, edited and recontextualized expressions of site, history and context.

Historically, tourist photographs have been attached to the notion of registering ones presence in a location, and functioned as a record for the revisiting of memories after the visit. The popularity of GPS tagging may be related to the notion of one's existence being a photographic referent. At the same time, the classic tourist photograph can also be thought of as more a ritualistic enacting of relationships rather than the documenting (consuming) of a site.[1] In many such cases, the site itself is of marginal importance.

Geographic Information System's (GIS) ability to append the photographic document with hard data might be thought to objectively authenticate the subjective experience, while at the same time, such supplemental elements are often divorced from any nostalgic value assigned to the photographic object itself. This divorce in meaning between the photographic image and its augmented geospatial data is clearly evident in *The Degree Confluence Project*, a participatory media project whose stated goal is "to visit each of the latitude and longitude integer degree intersections in the world, and to take pictures at each location."[2] The *Project's* notion of creating "an organized sampling of the world" is a Dadaist absurdity, an interminable exercise. Significantly, some of the images submitted are aesthetically disinterested, similar to the documentary-like images of the 1970's New Topography movement in photography, while others are clearly snapshots in the vein of tourism. Plurality of authorship and aesthetic is characteristic of collections of images that constitute *Degree Confluence* and similar online participatory projects. It remains for artists and cultural commenters to parse meaning from the cacophony.

To varying degrees, recent works of locative art have addressed this dilemma. Some techniques used by artists have included real-time GIS and related data tracking, the contrasting of data and/or official and anecdotal accounts of history, mapping, and geotagged photographs, sound and video. In addition, artists are often in the position of accumulating, databasing, and ultimately directing a multitude of voices, locations and experiences in time and space. Teri Rueb's *Trace*, 1999, for instance, collects "sound recordings that commemorate personal loss" in a database which "expands over time as interested participants continue to contribute memorial songs, poems and stories."[3] Participants experience these collected sound recordings within the context of a hike through Yoho National Park, located in British Columbia, Canada. This particular setting, along with the use of a hiker's backpack to house the necessary computer equipment for participant use, frames the multitude of voices within a very specific context that is ultimately determined by the artist herself.

Similarly, *talk…the…line*, 2007, an interactive installation by Sala Wong and Peter Williams, collides the at-once touristic, historical and commercial site of Wenseclas Square, Prague. *talk...the...line* examines the drastic socio-economic changes that have occurred within the city of Prague since 1968. Taking the famous Prague Spring as a starting point, participants are asked to re-examine the notion of "historical site" in the context of a tourist industry. Each year, millions of tourists retrace the footsteps of the Warsaw Troops, snapping photographs around Wenceslas Square. In a

Figure 1

sense, the individual tourist's experience is fleeting. However, the unending influx of visitors seems to have forever changed this site and its historical reading.

In *talk…the…line*, Photo Geotagging is used as a means for the recording of Absolute Location (latitude and longitude) alongside images, sounds, interviews of local residents and tourists, and historical documents to reference Relative Location. These two spaces negate and contradict each other, raising questions about history, subjectivity, and the social construction of collective memories (Figure 1). In addition to these conflicting elements, the artists assert their subjectivity through the physical expression of the Site itself (in this case, Wenceslas Square) as an installation in the gallery. The artists' experience of the Site is transported to another space and time. In this way, technology can be thought to have allowed for a metaphorical crystallizing and portable-izing of site-specificity. The physical layout and imagery in the installation is an interpretation of Wenceslas Square itself as a dead-end. This closed-off space can be opened with the sound of the participant's own voice, a gesture which emphasizes the importance of individual agency and social engagement.

The desire to confirm one's existence through mediated references in space and time is amplified by digital photography, geospatial media and collective authorship through the Internet. The tactical presentation and recompilation of these various voices by some locative artworks serves to direct particular interpretations and, at the same time, complicate assumptions about the significance of location to historical and cultural meaning.

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Arts and Science Collaborations for Mineralogy and Cultural Heritage:
The Social Aspects of Mineralogical Visualisation and Representation as Knowledge Creation Connecting Physical and Virtual Worlds

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Introduction

New authoring technologies and presentation media are giving us novel ways of experiencing representations of familiar objects in the physical world. Similar technologies have also extended the long history of scientific visualisation of dynamics, particles and other material not visible to the human eye. These technologies have also provided visual information for the interpretation of conditions at great distances and time in space.

The ambiguity of the visual is explored through a discussion of the use of old and new technologies for the visualisation of rock and mineral samples. Examples of mineralogical visualisation within pioneering European collections of minerals from the early years of the Industrial Revolution and colonialism, such as the Rashleigh Collection of Minerals from the Royal Cornwall Museum, Truro, UK, are compared with current 21st century visualisation that uses digital imaging and 3D stereo display systems.

This contrast of technologies used for mineralogical visualisation, spanning over two centuries, shows how the process of visualisation of minerals and rocks is also a history of wider shifts in scientific knowledge; as the history of ideas and as pragmatic solutions.

3D mineralogical images created within a scientific context for the mining and resources industries can be integrated into an arts and cultural heritage context for a broad-based audience. This study, therefore, informs wider considerations of collaborative knowledge production across the arts and sciences.

Mineral identification

Early naturalists relied upon simple observations of colour, habit, streak and other physical properties to classify and often name a mineral. The mineralogist, Philip Rashleigh (1729-1811), amassed a highly regarded collection of minerals from the 1760s until his death in 1811, and also recorded those specimens through print editions derived from water colour drawings. His *Specimens of British Minerals* was published in 1797, which was the first work in Britain to provide accurate illustrations of mineral specimens in their natural colours.[1]

These observed physical properties were the result of a mineral's chemistry or structure, but it was not until much later that classical mineralogists made this connection and expanded upon these simple observations to include a mineral's reaction to chemical reagents, the specimen's apparent chemical make-up (as evidenced by blowpipe and similar analyses) and the mineral's optical properties.[2] During the last century, microscopes and spectroscopes were the means of investigating the internal structure of rocks and minerals. Crystallography then developed as the means of visualising this information, first through geometry and then with the help of X-ray diffraction.

Imaging the mineral specimen

Scientific and technological advances provide us with the means for the multi-scale imaging of the external shape and texture, and internal structure of rocks and minerals.[3] The data generated through all the means available now allows us to visualise rocks at the planetary, continent,

regional, kilometre, metre, millimetre, micron, nano and atomic scales. This is achieved, across all these scales, via techniques such as remote-sensing (laser ranging and photogrammetry); computed tomography (CT), microCT and nanoCT scanning and atomic force microscopy.

The movie and manufacturing industries have also prompted the development of other technologies that are of use in the imaging of rocks and minerals, namely hand-held laser scanning and rapid prototyping ("3D printers").

Through these techniques we are now able to photograph and scan (laser and CT) rock and mineral specimens and generate realistic models of their external shape and colour, and internal structure. That is, a realistic replica both as a virtual computer model (3D visualisation) and as a physical model (tactile visualisation).

While photogrammetry is as old as modern photography itself, and can be dated to the mid-nineteenth century, the majority of the technologies that are used to image rocks and minerals are less than a hundred years old. The CT (computed tomography) scanner has its origins in 1930s tomography and its computer-aided form was conceived in 1967, with first commercially viable CT scanner being publicly announced in 1972, and the micro and nano scale versions being very recent additions. Laser ranging was first carried out in the mid-1960s[4] and the first airborne LiDAR measurements were carried out in 1967.[5] The first atomic force microscope (AFM) was invented in 1986.

Creating the virtual mineral

With the available imaging technologies it is now possible to create computer and physical models representing exposed rock faces, down to individual rock and mineral specimens, and ultimately crystal structure and atomic levels. For example, through the use of a CT scanner it is possible to derive 2D grey-scale 'slices' through a rock specimen and from these to generate a 3D visualisation and model of the internal structure and distribution of minerals and rock grains. This CT data can then be used in conjunction with a 3D laser scanner to produce a full 3D representation of the outer shape and colouration of the specimen, effectively creating an exact copy of the original specimen (Figure 1).

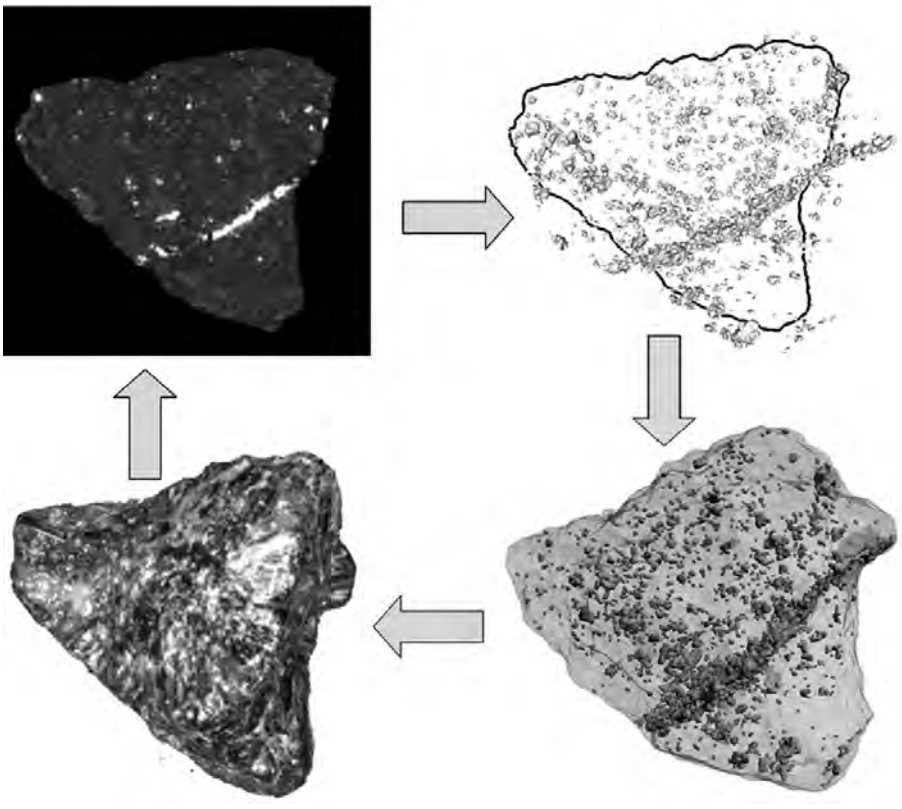

Figure1: A mineral specimen goes full circle via 2D slices to complete 3D model

Exploring the *Virtual Pit*

The collaboration of art and science for mineralogy and cultural heritage purposes will be realised in the *Virtual Pit*, wherein the concept is to travel in scale from the whole mining pit to a section of the pit (rock) wall and individual rocks, then down to mineral grains, crystal lattice and atoms. The *Virtual Pit* will move beyond experiments that use virtual environments and interactive displays to create a virtual museum for minerals and molecules.[6] The *Virtual Pit* will also seek to integrate a "journey" where sensations of space, scale, excavation, displacement and removal can be explored with narratives of from people whose exploration and labour formed the pit, or whose lives were shaped and affected by its formation, transformation and growth. In this context, changing methods of visualising and representing scientific knowledge is one of many strands of historical narrative.

One challenge is that, although the techniques described above are available, there is no data or visualisation cues to seamlessly transition from one scale to the other. Artistic techniques will, therefore, need to be employed to deliver a meaningful and enjoyable observer experience.

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The Interactive Village: Ethnography and Narrative

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> "...since the inception of the telegraph and radio, the globe has contracted, spatially, into a single large village" Marshall McLuhan (1964:5)

The Interactive Village is an ethnographic multimedia production that aims to evolve a human-interest documentary style viewing space through which users can navigate routes of their choice through village material: scenes, interviews, activities and commentary. The production, based on everyday life in a small village in the Czech Republic, was enabled by the NM2, New Media for a New Millennium[1] interdisciplinary research project which had the main goal of creating new production tools for the media industry, in addition to the more ambitious aim of creating a new media genre. The tools were designed for the easy production of non-linear, personalised media genres suitable for transmission over broadband networks.

The village of Dolní Roveň was visited on a regular basis over a period of two years and in order to identify, shoot and collect relevant information. Rather than shooting a definitive storyline (or storylines), we found ourselves looking for "story potentials" in the style of the early stages of investigative journalism — bearing in mind it is a "story" that does not have to be finally "written-up" in a definitive manner. Ultimately it becomes up to the user to develop the narrative building blocks provided by the media tools into the "story" of his or her own choice.

Research and production

An initial structure for the production was based on Gustav Freytag's analysis of dramatic structure. With its origins in Aristotle's *Poetics* and adaptation for interactivity by Laurel (1990:82), it provided a useful scheme for addressing narrative frameworks. Another important influence was ethnographic film which also helped to form the rationale and strategy for the production (Wright 1992 & 2003, Loizos 1993). A more historic source of inspiration was Humphrey Jennings' documentary film *Spare Time* (1939). His approach to filmmaking was characterised by a locative episodic structure with a loose 'dawn to dusk' storyline. Also, in the planning of *The Interactive Village* production attention was paid to the particular style and humour of the Czech *New Wave* cinema of the 1960s.

The production method was also informed by studies of ecological theories of perception (e.g. Heft, 2001). The video material was gathered in such a way that aimed to anticipate and mirror the user's viewing and active exploration of *The Interactive Village* programme and website. Consequently we abandoned the traditions of the carefully planned documentary and threw ourselves into an exploratory process which entailed the immediate gathering audio-visual material. This rapid assemblage of footage provided a loose collection of material from which loose narrative structures could be organised and built in a "hands on" manner. Working in this way (akin to the methodology of the anthropologist), the material was gathered to form an organic cell-like structure.

Village Structure

In the context of the theory of visual anthropology, *The Interactive Village* takes the three central approaches traditionally taken by ethnographic filmmakers. According to Henley (1985) these are: Didactic, Journalistic, Observational. Didactic, the most prevalent model, usually involves a presenter who acts as a guide for the viewers explaining and contextualising what they are seeing. The Journalistic mode provides a specific point of view: "typically built up around a particularly dramatic story or issue" (Henley 1985:7). The Observational approach has the superficial appearance of the filmmakers taking a 'back seat'. It attempts to allow the viewer direct access to the filmed material with as little 'third-party' intervention as possible. For *The Interactive Village*, we re-ordered the modes into Observational — Didactic — Journalistic. However, rather than being the sub-genres presented to the viewer, the user can now decide whether to: watch

Figure 1: *The Interactive Village* interface enables the user to select 'stories' by location or image.

& listen in Observational mode; access the Didactic anthropologist's commentary explaining, guiding and informing; or to "take issue" by accessing a particular point of view on a subject or issue e.g. threat to rural transport issues — viability of train service, village communication. The Interactive Village *Journalistic* mode re-models Henley's concept of *journalistic* away from the film director/journalist to the user becoming the journalist: piecing together programme material into a narrative structure that reflects his/her own interests.

As a result, *The Interactive Village* interface has been designed to give the end-user access to these three modes. The production format offers a range of unique interactive experiences on a sliding scale from 'High/ Low Information' from news headline presentation to in-depth documentary to user-explored/contributed to ethnography. Each configuration provides a personalised interactive experience, where the source sequences are configured seamlessly in real time to suit the personal wishes and needs of engagers. The 'Observational' mode comprises loosely ordered video-clips linked through personal, topical or locational associations and presented as an endless loop. When the user, watching the programme, running uninterrupted in default 'observational' mode, engages (e.g. via a single click) to select, explore or play, the system registers the clip currently being played back, and chooses a property of that clip to engage with a new loop of associated clips. If the user does not interact, the system will automatically engage a new loop when media files satisfying the current criteria have been exhausted. *The Interactive Village* employs a 'nuclear' structure that enables the user to access material along a variety of classified thematic (topic) threads and at a number of graded levels, within the three main modes Observational (view), Didactic

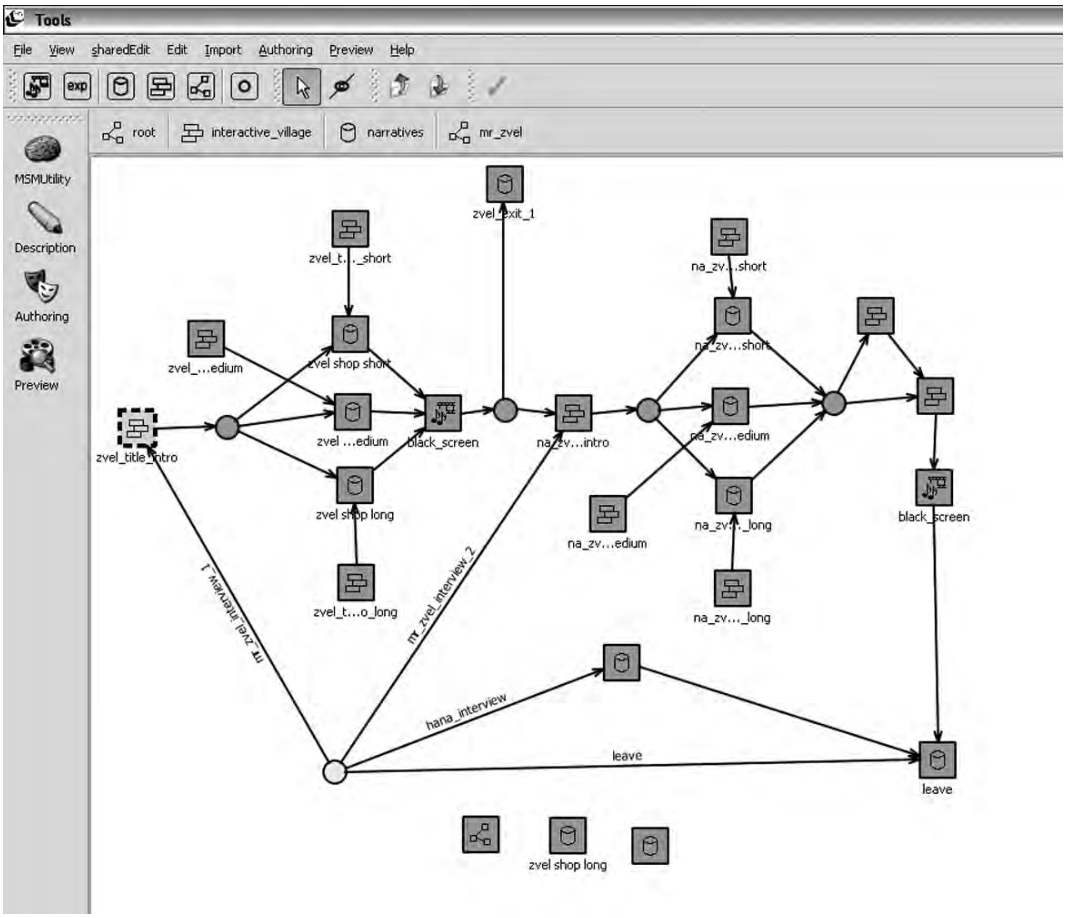

Figure 2: *The Interactive Village* in the NM2 media tool.

(select), Journalistic (search and compile). Configuration of individual programmes is seamless, through sensitive dependence on initial conditions set by the engager via direct interaction with the moving image material or via a topical graphical interface. The tool enables the user to switch between modes as s/he engages with the material. So if the user is in 'observational' mode s/he can change to 'didactic' if/when contextualising information/voice-over narration is required. Or, at any stage, the user may decide to 'take an issue' and gather information about a particular subject. *The Interactive Village* aims to present the unique character of Dolní Roveň and issues specific to that village, while maintaining a sense of village universality. The production has developed a format that could be applied to other locations. In some senses *The Interactive Village* could also be Marshall McLuhan's 'global village' — *Any Village Anywhere.*

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1 an Integrated Project under the European 6th Framework Programme.

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The Asian Traditional in the Works of Liu Kang and Tan Kai Syng

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This paper discusses the idea of Asia in the works of two Singaporean artists whose practices are some sixty years apart: painter Liu Kang (1911-2004) and digital video artist Tan Kai Syng (b. 1975). Focussing on a piece of art work by each artist, I suggest that while the two artists appear to have different understandings of the meaning of Asia, both use Southeast Asian art forms to signify the Asian "traditional" — complicated by the possibility that such "traditional" aesthetics were at least partly first affirmed in the West.

Modern art in Asia is often tied to ideas of tradition and cultural authenticity.[1] Art historian John Clark has argued that much of Asian art in the 20th-century came about as a result of contact with Western Europe. The perceived reliance on "foreign" ideas frequently led the artists to attempt to create art forms that were based on their own "traditions".[2] Underlying this mode of art making was the belief that while it was important to look to the West for ideas on the modern, the use of these concepts might threaten the "cultural core" of Asian artists. The "traditional" — ideologically constructed by leaving out historical complexities and often thought of as antithetical to the West — became a source for artistic ideas that could protect Asia against the possible "undesirable" influences of the north Atlantic countries.[3]

The connection between cultural authenticity and modern art can occur at both a national and a regional level.[4] In the case of Singapore — a country which lacks a shared originary past, the question of a common culture is a complex one. For some artists, the concept of Asianism — the belief that different communities in Asia share fundamental commonalities — appear to be significant in the understanding of tradition.[5] The two works discussed here — Liu's painting *Artist and Model* (1954) and Tan's video *Southern Tales* (2002-2005), use Indonesian artistic elements the Asian traditional, with the implicit understanding that the artists themselves — despite being residents of urban Singapore — have claims over such traditions.

Liu's and Tan's art works suggest that the artists understand the term Asia differently. For Liu, Asia is a cultural sphere that is centred in China; with the "rise" of the West, the influence of China in Asia has weakened, and rejuvenating Asia by emphasising the traditional was a key concern in the artist's works. Tan's works challenges Liu's idea of Asia — defined as antithetical to the West and understood to have a clear centre-periphery structure. The Asia that she knows is one that has neither a clearly defined boundary nor a firmly entrenched hierarchy; it is an open system whose power centres are constantly shifting.

Liu's *Artist and Model* is a painting inspired by batik textile — understood by the artist to be an art form that embodies the "essence" of Southeast Asia. The image shows Liu's colleague Chen Wen-hsi creating an image of a woman. The formal system is syncretic. In addition to batik patterns, the artist also used aesthetic elements from European modernist and Chinese literati paintings. All the objects are rendered as flat surfaces filled in with pure colour, and are outlined in unpainted strips meant to imitate the dye-resisted areas on a batik fabric.[6]

Liu Kang began his artistic career in Shanghai during the May Fourth period, when intellectuals and cultural elites were finding ways to reform China on all levels.[7] Despite having moved to Singapore when he was still in his twenties, the desire to "save" China continued to inform his works years after he left the Middle Kingdom. Much of his artistic production in the post-Shanghai period was concerned with the cultural linkages between Singapore and China, and he devoted a good part of his career in creating art works that were meaningful to both places. *Artist and Model* is closely related to the discourse of Malayan art in the 1950s — one in which the British expatriate community appeared to have played a significant part. Artists and other cultural elites were interested in creating art works that would be suitable for the soon-to-be-independent Malaya. Batik — considered to be an "essential" Southeast Asian art form — became a source of inspiration for the making

of "Malayan art".[8] For Liu, such appropriation was significant on an additional level: batik signified a return to a pre-modern Asian past unadulterated by Western materialist influences; the use of such aesthetics could help strengthen Asia — understood to be a cultural realm centred in China — by beefing up "thinning" cultural authenticity.[9]

Tan Kai Syng's *Southern Tales* shows a different understanding of Asia. For Tan, Asia has a "landscape of plurality", that is, a region without a clear centre, and whose histories cannot be conflated into a single narrative. The audiovisual essay is part of a series of works, titled *Island Hopping*, that the artist created by combining footages taken on her trips to different islands in Asia.[10] Inspired primarily by French filmmaker Chris Marker's filmed essays, Tan had wanted to show her personal experience of the complexity of Asia by juxtaposing images from varying locations conventionally understood to be parts of an organic whole.[11] The work includes the following fragments: a car trip with an Okinawan man, a visit to the U.S. military base in Okinawa, a trip to the Hiroshima Peace Memorial, and scenes of Bali and Singapore. The footages appear in no particular order, but are edited so that they constantly interrupt each other — gently occasionally but violently at other times. What emerges is a work of overlapping images which appear simultaneously distinctive and inextricably entwined.

The disparate visual images *Southern Tale* are given a sense of a whole by the audio component of the work. Tan had chosen a gamelan-inspired piece written by Singapore composer Philip Tan, possibly motivated by how such sounds signify traditional Asia. Like the batik patterns in Liu's *Artist and Model*, the status of gamelan music as an "essential" Southeast Asian art form appeared to be at least partly a Western construct.[12] Thus, although Liu's and Tan's works are different in a number of ways, both turned to partially orientalised aesthetic forms as a representation of traditional Asia.

Note: I would like to thank Tan Kai Syng for our extended conversations, as well as granting me access to her art works and publicity material from past exhibitions.

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Violent Interfaces:
The Jack Bauer Training Kit

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Abstract

In this paper we present The Jack Bauer Training Kit (JBTK), a new physical interface and video game add-on for viewing episodes of the Fox television series "24." Jack Bauer, a fictional character in this series, is notable for using torture as a method for extracting information from "bad guys." Using JBTK, players watch the show until a torture scene starts and can choose to advance the narrative by pouring water onto the hooded face of a physical 10 inch doll bound to a small table by leather restraints. Pouring just the right amount of water gets you a high score, too much and you might kill the "bad guy." Rather than using an abstract game controller as most video game consoles do, where the functionality is physically and conceptually detached from the stylized actions on the screen, the JBTK mimics the torture applied in the real world by physically instantiating its representations, violence and consequences.

Introduction

Much of the public discourse on the topic of violence and torture in entertainment is wrapped in hyperbole and controversy. As viewers, readers, and players of electronic media, we are often protected behind a layer of abstraction via carefully constructed representations. We use plastic game controllers with abstract buttons and pads, which are devoid of content, to direct action that is inherently disconnected from the experiences we live on the screen. As Michel de Certeau writes in *The Practice of Everyday Life*, games betray a logic for everyday life. However, in our lifetime, this logic of games includes a serious abstraction from the consequences of our actions.

Figure 1: A user playing JBTK — during a torture scene in "24," the user has to successfully waterboard a doll representing the terrorist suspect.

"24": Summary and controversy

The FOX television series "24" has become a focal point for the torture controversy. Its hero, Jack Bauer, is a US government agent in the fictional Counter Terrorism Unit (CTU). Over seven seasons, the show has featured scenes in which Jack Bauer tortures individuals in order to extract information from them. For example, in season 4, episode 11, Jack strips down a lamp cable to electrocute his girlfriend's ex-husband. According to the Parents Television Council there were 67 torture scenes during the first five seasons of "24."

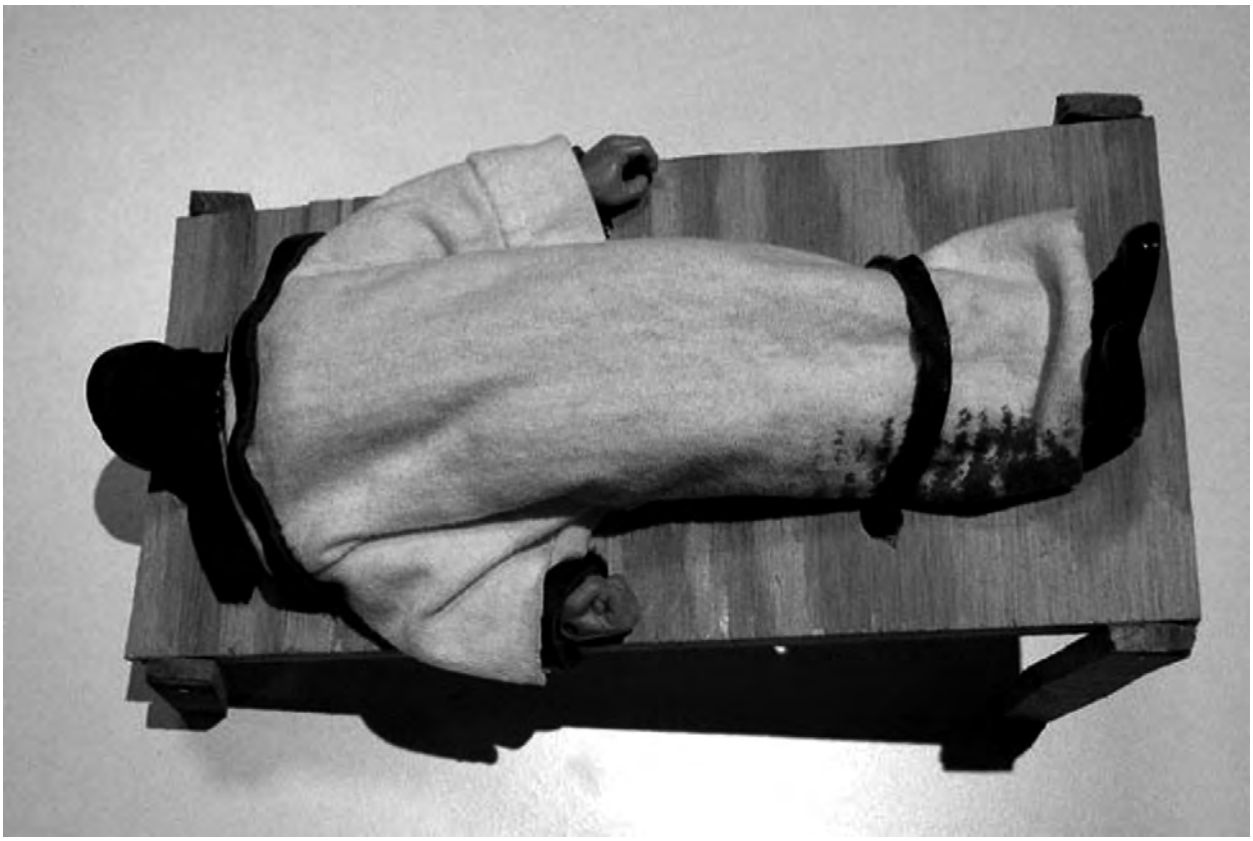

Figure 2: The terrorist doll.

In particular, “24” often depicts the “ticking time bomb” scenario, a thought experiment used to explore the moral implications of torture. In the scenario, the authorities hold a person who is suspected of holding information that, if revealed, will allow the authorities to defuse a ticking time bomb that will soon detonate, causing a huge loss of life. Proponents of the acceptability of torture argue that the authorities are justified in torturing the suspect in this case. In 2007 US Supreme Court Justice Antonin Scalia cited “24” during a panel discussion on torture and terrorism. He supported Bauer’s use of torture to prevent a nuke from detonating in California, asking “is any jury going to convict Jack Bauer? I don’t think so.”

Control and abstraction

Despite the controversy surrounding torture, its inherently visceral dimension is often missing from the discourse. In the case of TV and film, torture scenes occur in the abstract space of a two-dimensional screen with the viewer a passive, powerless observer. In interactive media such as video games, the user controls actions via an abstract set of controls (buttons and thumb-sticks) that have no physical relationship to the actions he or she performs in the virtual space. Does the inherent psychological distance between the viewer/user and the actions taken by characters on screen affect his or her moral and political perception of torture?

While we take nothing away from the emotional power of visual media and video games, we seek to narrow, or at least alter, the gap between the user's actions as depicted virtually and their actions in the real world. If we make the relationship between action and result less abstract, do we re-engage a sense of viscerality and/or responsibility into the torture question? How does mimicry of a violent act in an interactive experience affect the perception of that violent act?

The Jack Bauer training kit

The Jack Bauer Training Kit is a tangible video game system that makes the TV show "24" an interactive experience. Users watch the show, and when a torture scene begins, the show stops momentarily. In order to advance the show and earn points, the user has to help Jack Bauer interrogate his suspect: using a water-filled cup, the user must pour water over a representation of the suspect tied to a board, mimicking the waterboarding procedure. If the user pours too much water or pours it too quickly over the suspect, he dies, and the user must try again. If the user pours too little or too slowly, the suspect refuses to cooperate. In these two losing conditions, the ticking time bomb goes off. If the user succeeds in torturing the subject the right amount, he gets the information he needs, and the show continues.
The suspect's unwillingness to give up information and his "life points" are represented by a bar graph on the screen, which the user must monitor in order to torture the right amount. Using the JBTK, users can help Jack foil terrorist plots and master his techniques.

We implemented the JBTK by editing episodes of "24" and embedding them in a Flash script. The pouring cup is augmented with a tilt sensor and microcontroller; the microcontroller communicates the tilt readings to the host running the interactive version of "24." Using the stream of tilt data, the script determines whether the user has met the torture success conditions, advancing the show if he or she has, and returning to the beginning of the torture scene if not.

Using the Jack Bauer training kit: Questions and provocations

The JBTK seeks to more closely mirror the user's physical actions to actions represented on screen. Of course, it does not totally unite them – using the JBTK is not the same as torturing a human individual! Pragmatically, the user must map waterboarding to the different types of torture techniques Jack Bauer uses. This of course increases the distance between user and his or her actions, and no doubt forces upon the user tacit assumptions about torture and Jack's actions, while also setting up a dissonance between television's stylized representations of torture and the way that torture is often practiced today. A future version of the JBTK could include a set of dolls, in which the user mimics Jack's torture techniques directly.

Conclusion

User responses have covered the spectrum of disgust to enjoyment; in all cases, however, users seem to re-engage with the torture question after using JBTK. As creators, we acknowledged the wide variety of potential responses, including the darkly humorous nature of JBTK; but sought to favor no particular dimension in particular.

"Day 4, 5:00–6:00 p.m." *24*. By Joel Surnow and Michael Loceff. FOX. 28 February 2005.

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Parents Television Council. http://www.parentstv.org/ retrieved April 25th, 2008.

Justice Scalia quote via Crooks and Liars. www.crooksandliars.com/2007/06/19/scalia-asks-'are-you-going-to-convict-jack-bauer'/ retrieved April 25th, 2008.

Co-evolving Affective Wearable Computer

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The practical use of the Co-evolving Affective Wearable Computer (CAWC) is to facilitate processes of man-machine-man motor-sensitive communication, specifically the intention and performance of voluntary and involuntary movements and the exchange of digital affections. The main motivation lies in offering another channel of communication that goes beyond verbal and visual scope. As a result, it also lies in searching possible communication processes that take place when biological data information (mioelectric signs) used for training technological environments, both associative and evolutionary, return to the biological environment as motor-sensitive stimuli to the bodies of individuals and of body artists.

This process comprises the following operations: the acquisition of the emotional state and of the computer user's movements (or the thought of a movement); the coding of such emotional states and movements in motor-sensitive stimuli as well as the transmission of such stimuli to the body of the same or of another interacting individual. For this to be achieved, the 'CAWC' is made up of an intelligent conducting surface that comprehends: wrist detectors for blood volume and skin galvanic response, to capture the user's emotional state; electrodes to capture the user's electric and brain signs; electrodes for the electric neuromuscular stimulation of the interactor and two communication technological systems — an associative one and an evolutionary one. Such a surface changes its color and shape, co-evolving with those who wear it during the process of interaction between them, trying to materialize the memory of the interactive process between men and machines in the physical framework of the device. Designed for the use of one or two individuals, the computer operates this communication process between physically near or distant people. In both cases, the emotional states, movements (or thoughts) are sent from one body to the other through the net. Because the limited space to expose all concept of the CAWC here, we will present just the phases that are involving in the proposal of the device for designing body movements for dancing, acting, performance and theater.

Device for designing body movements for dancing, acting, performance and theater

The CAWC works as a device for the communication of movement through a creative and collaborative process between the man's and the machine's intelligence. For this to be attained, the operating technological system is evolutionary. That is, the information (movement or thought) performed by the computer user is coded, apprehended and evolved in this system. Thus, the stimuli to be given and performed as movements differ from the initial information introduced in the computer, as it starts to show patterns that characterize the co-authorial process between man and machine.

Action through movement

At this stage, the CAWC operates from the acquisitions of the user's movement to code in an evolving way this movement in motor-sensitive stimuli.

Individual application

At this instance, the CAWC works as a tool for the individual artistic creation that allows the individual to perform a movement and, right after that, get motor-sensitive stimuli that make him perform a different movement from the previous one, once new patterns can emerge form the co-authorial relation between the technological and biological systems.

Collaborative application

Here, the movement performed by individual A is apprehended and evolved by artificial intelligence, which inserts new patterns into this movement. This new emergent patterns can be observed in the movement performed by individual B — which is distinct from the input 'sent' by individual A. What can be noticed from now on is a creative looping, in which the new movement performed by individual B — a result of this collaborative creation process between the biological and technological systems — comes back to the evolutionary technological system, being recognized and evolved

again to be 'sent' back to individual A as motor-sensitive stimuli which will make him perform a movement that is neither the one he performed as a first 'input' of the system, nor the one sent as a response by individual B. That is, what one observes is a continuous system of biological/technological creation of movements.

Action through cerebral command

At this stage, the CAWC operates from the acquisition of the user's cerebral command to code in an evolutionary way this command through motor-sensitive stimuli.

Individual application

At this stage, one observes the co-authorial creative process between the evolved systems in which the movement imagined by the interactor gains new emergent patterns in the artificial intelligent environment. As a result, the motor-sensitive stimuli produced in the interactor's body lead him to perform a different movement from the one initially thought of.

Collaborative application

At this instance, individual A thinks of a movement to be introduced in the system as cerebral commands. These coded commands start to evolve in the technological environment. As a result, new emergent patterns are visualized in the movement performed by individual B. The same process is repeated from individual B towards A.

Designed to promote the exchange of affections and motor-sensitive dialogs in real-time, mediated by technology, the CAWC takes shape as open, dynamic system where unpredictability is also an integral and fundamental part of the process.

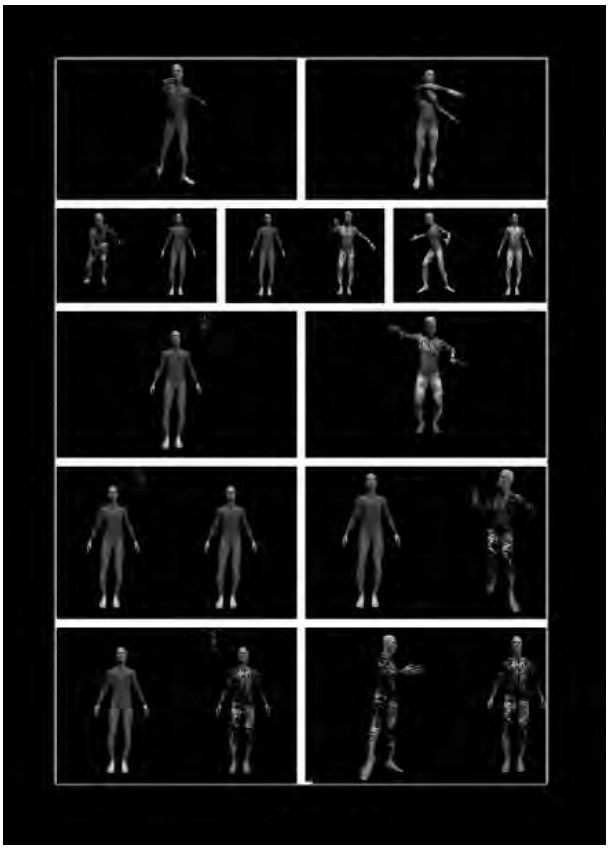

Figure 1: Individual and Collaborative applications of Action through movement and action by cerebral command of the device for designing body movements for dancing, acting, performance and theater

Zuanon, Rachel. Computador Vestível Afetivo Co-evolutivo: Processos de Comunicação entre Corpos Biológico e Tecnológico. Doctorate thesis, Semiotics and Communications Program, PUC-SP, São Paulo, SP, 2007.

PANEL PAPERS

Panel: Curating in/as Open System(s)

Contributors to the panel:
Geoff Cox, Joasia Krysa (chair), Vicente Matallana,
Martha Patricia Niño Mojica, Yukiko Shikata, Luís Silva.

Panel introduction:
Joasia Krysa (KURATOR/University of Plymouth)

The panel addresses the possibilities for collaborative curatorial practice, responding to the wider critical concern of how socio-technological systems (such as networks, online platforms and social software tools) have changed the practice of curating.

The suggestion is that curating not only increasingly involves open socio-technological systems, but in itself can be described in terms of open systems. Describing curating in such terms implies a state in which the curatorial system continuously interacts with its environment demonstrating characteristics of openness: the system is opened up to the communicative processes of producers/users and to the divergent exchanges that take place which disrupt established social relations of production and distribution. Thus, and importantly, the software opens up curating to dynamic possibilities and transformations beyond the usual institutional model (analogous to the model of production associated with the industrial factory) into the context of networks (and what is referred to nowadays as the 'social factory').

This tendency — that emerged from the shared perception of the Web and the Internet as an increasingly independent and open platform for the production and presentation of art — is well instantiated in a number of historical and more current projects such as Eva Grubinger's *C@C — Computer-Aided Curating* (1993-1995), Alexei Shulgin's *Desktop Is* (1997), *Runme* (2003), *Source Code* (Luis Silva, 2005), *TAGallery* (2007), *undeaf* (2007), *Hack-able Curator* (2007), Robert Lisek's *FACE* (2007), Pall Thayer's *CodeChat* (2007) and *kurator* software (2007).

The panel reflects upon new curatorial forms and an expanded description of curating enabled by social technologies and an open systems approach.

Curating in/as Open System(s): Social Technologies and Emergent Forms of Curating

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The paper responds to the wider critical concern and understanding of the dynamics of socio-technological systems and their relevance for curating. The emphasis is on the notion of open systems, insofar as this relates to the openness of technological systems (such as networks, online platforms and social software tools) and the practice of curating.[1] The suggestion is that curating not only increasingly involves open socio-technological systems, but in itself can be considered in terms of an open system. Consequently, the paper reflects upon the emergence of new curatorial forms and offers an expanded understanding of curating enabled by social technologies and an open systems approach.

The importance of systems thinking for an understanding of curating in terms of open systems is in establishing how nothing happens in isolation, how everything is interlinked as part of a larger structure that is thoroughly networked, and most importantly, how complex components in interaction work together within wider systems.[2] Organisation and operation, or in von Bertalanffy's terms, 'developmental organisation', are key to this. A better understanding of the dynamics and structures of open systems thereby establishes some of the working principles for curating in open systems, and curating as an open system.[3] This takes its cue from systems theory and second-order cybernetics, to understand some of the nodes of power and forms of control therein, as well as the importance of feedback loops and self-organisation. In addition, the urgency of rethinking organisational models decoupled from centralised power are derived from network cultures in recognition that new paradigms demonstrate the paradoxical structural logic of what Michael Hardt and Antonio Negri describe as 'governance without government' or, in Ned Rossiter's terms 'non-representational democracy'.[4] This reflects the fact that the network itself is adaptive and somewhat resistant to control, despite all attempts to exert control over it. Relational and adaptive processes suggest new organisational models for online curatorial practices.

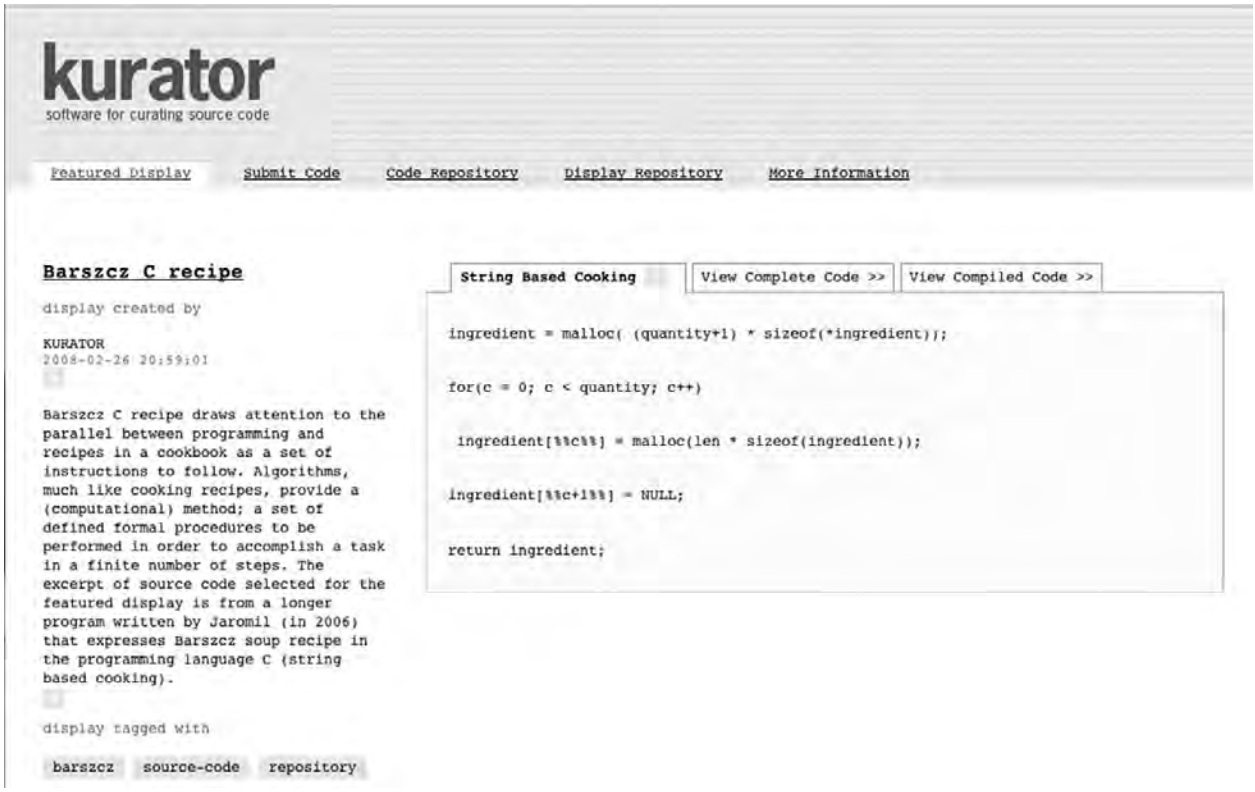
Describing curating in such terms implies a state in which curatorial system continuously interacts with the socio-technological environment: the system is opened up to the communicative processes of producers/users, and to the divergent exchanges that take place and that disrupt established social relations of production and distribution. Thus, and importantly for an understanding of the power relations involved, the software opens up curating to dynamic possibilities and transformations beyond the usual institutional model (analogous to the model of production associated with the industrial factory) into the context of networks (and what is referred to by Autonomists as the 'social factory').

Importantly, it is a network of users that constitutes the system, along with the technological apparatus in its broadest sense. An emphasis on the user in the curatorial system is particularly significant in this context, as it is the user who dynamically determines its openness. Thus, it is also important to note that the openness of such systems may vary considerably. Similarly, Katherine Hayles points out that systems may well be 'technologically open' but 'informationally closed'. By describing systems as informationally closed, she is drawing upon an understanding of second-order cybernetics in which systems respond to stimuli of their own internal self-organisation. To further explain, an understanding of systems is determined by their internal self-organisation, and the informational feedback loops 'no longer function to connect a system to its environment' and 'no information crosses the boundary separating the system from its environment'.[5] Her suggestion, and the one followed by this paper, is to shift attention to emergent transformative processes that can offer an understanding of systems as 'informationally open' and that are in keeping with more current interpretations of socio-technological networks.

There has been a growing number of curatorial interventions in this respect, that attempt to deconstruct the conventions of curating by applying the open systems principles and utilising social technologies such as wikis, blogs, tagging, online social networking platforms and

software more generally. In this sense curating can be characterised as open and distributed as a reflection of the organisation of the system of which it is part, and within which it unfolds. This tendency — that emerged from the shared perception of the Web and the Internet as an increasingly independent and open platform for the production and presentation of art — is well instantiated in a number of historical and more current projects such as Eva Grubinger's *C@C — Computer-Aided Curating* (1993-1995), Alexei Shulgin's *Desktop Is* (1997), *Runme* (2003), *Blogging as Curating* (Luis Silva, 2005), *TAGallery* (2007), *undeaf* (2007), *Hack-able Curator* (2007), Robert Lisek's *FACE* (2007), Pall Thayer's *CodeChat* (2007) and *kurator* (2007).[6]

kurator is an online platform for collecting, storing, organising and viewing source code. It consists of an open, collaborative and un-moderated database and a display platform that draws attention to the cultural significance of code.[7] Code collected through an open-submission process is indexed and stored in the project repository, and can be arranged into larger selections for public display. The displays are thematically organised selections of code from the project repository created by users, or automatically generated by the kurator software itself. In parallel to the activity of curating code into displays, users — programmers, curators, artists and the general public — can make modifications to the *kurator* software itself. New versions of the software can be saved in the project repository for public display, commenting and further development.



kurator (2008), screenshot: Featured Display, 'Barszcz C Recipe', http://software.kurator.org/v1/

The project implements an open source model of curating on two levels: firstly, on a technical level as a free software application licensed under GPL (General Public License) to ensure its future development under the same conditions;[8] and secondly, on a conceptual level as an open curatorial system. In this way, the project speculates upon the production of curatorial software, and the general practice of curating, beyond a singular closed proprietary model to a collaborative open source model for future public development.

The proliferation of such projects prompts the question of a pseudo-democratisation of curating on one hand, and reconfiguration of curatorial practice that challenges the defining role of institutions in the networked environment on the other. Certainly some of the premises of conventional curating are challenged, if not transformed.

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1 For instance, this has been explored by Burnham in 'Systems Esthetic' (*Artforum*, 1968) and 'Real Time Systems' (*Artforum*, 1969), Nichols in 'The Work of Culture in the Age of Cybernetic Systems' (1988)).

2 Barabási's *Linked: The New Science of Networks*, p.7 and von Bertalanffy's *Robots, Men and Minds*, p. 69.

3 In computer systems, it broadly refers to open software standards, allowing open access, open operability and portability, originating in the late 1970s mainly to describe systems based on Unix, and in turn Linux. In this sense, open systems stand for the same working principles as open source.

4 See Hardt and Negri's *Empire*, p. 13-14 and Rossiter's *Organised Network*.

5 See Hayles' *How We Became Posthuman*, p. 10-11.

6 Examples cited are: *C@C — Computer-Aided Curating* (http://www.evagrubinger.com); *Desktop Is* (http://www.easylife.org/desktop/); *Runme* (http://www.runme.org); *Bloging as Curating* (http://vercodigofonte.blogspot.com/2005/11/on-blogging-as-curating.html/); *TAGallery* (http://del.icio.us/TAGallery/); *TAGallery/EXHIBITION_I.tag_you* (http://del.icio.us/TAGallery/EXHIBITION_I.tag_you); *unDEAF* (http://undeaf.v2.nl/); *Hack-able Curator* (http://www.hackablecurator.org.uk/); *FACE* (http://fundamentalresearch.org/FACE/face.htm); *CodeChat* (http://pallit.lhi.is/~palli/codechat/codechat.php); *kurator* (http://software.kurator.org/v1).

7 *kurator* (http://software.kurator.org/v1/); more info (http://www.kurator.org/wiki/main/read/Kurator)

8 See: GPL (General Public License) (http://www.gnu.org/).

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Living Agency — Curating in the Age of Digital Networks

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Since the beginning of 20C, the expression of art has already shifted to 'discovering', 'selecting', 'editing' and 'collage-ing' enormous existing daily products in creative ways. As one of the extreme examples that can be seen in Kurt Schwitters' *Merzbau* where he extended his body, spirit and memories to the never-ending process, in the form of physical interior and architecture, I would like to interpret this work as a new form of curating, developed rather personally, unconsciously.

In the beginning of the 21st century, digital, telecommunication networks enabled us to create new ways of curating in the Internet, or networks assisted by the WWW, online software tools and services. Here, you can just type in, choose, recommend, or tag any words and information you like and they would be immediately organized in a certain context or manner, shared by other people via networks, and the process continues.

This is not only happening in the field of digital networks, but also being extended to the territories of nature and urban, social, cultural environment beyond natural and artificial, analogue and digital, micro and macro, when we consider the current development of nonlinear science. Here, we humans are not only external observers to the world but at the same time internal observers to influence the ever-changing living world as active factors, and this status — acting in/by blurring borders — would become an emerging model of our existence. And curators and artists could act promptly as "agencies" to make it visible for broader public.

Figure 1: "MobLab: Japanese-German Media Camp" , 2005, MobLab Committee
Photo: Ayuko Nozoe

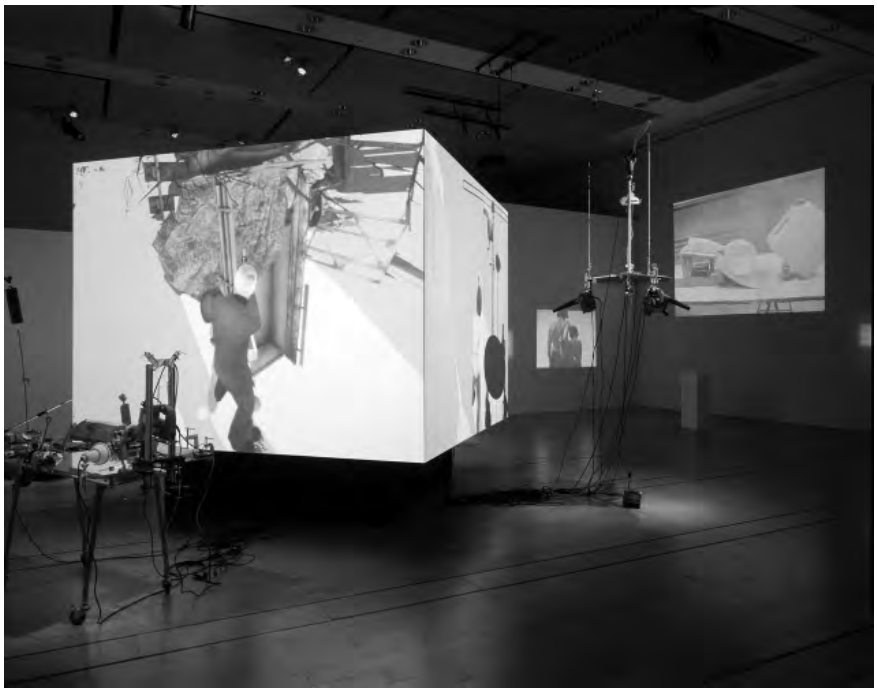

Figure 2: "Connecting Worlds" exhibition, 2006, NTT InterCommunication Center[ICC]
Photo: Keizo KIOKU

Now, we live in the age of blurring borders between artists and curators. Curators and artists can offer an open system for the broader people to participate, interact and develop with assistance of computer networks. We could say that this phenomenon is naturally brought by the current technological development, and it surely has meaningful aspects by decreasing existing hierarchy and centralization established in an analogue-, reproduction-based modern society. It also gives us the opportunity to stop by and reconsider the possibilities of artistic expression and curating in the age of digital networks: How we can articulate artists from curators, and what is the border of curating and non-curating, how the curatorial, artstic process would work, what kind of position, perspective and behavior curator would have…?

In the panel "Curating in/as Open System(s)", I would like to raise the importance of ongoing creative investigation in curating to open a new dimension of communication, collaboration and creation, by introducing the aspects of "process", ''connective-ness" and 'relation' in the age of digital networks. I would also like to raise the possibility of curating as the forerunning model of 'living agency', sensing what is necessary for the future of culture and society and raise it in creative, critical behavior in the middle of dynamic phenomenon for the new cultural, social transformations.

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Antisocial Notcurating

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antisocial notworking (running Rui Guerra's www_hack), http://project.arnolfini.org.uk/antisocial/

project.arnolfini (http://project.arnolfini.org.uk) is an online experimental production and management system that is linked to the physical spaces and the curatorial programme of Arnolfini (an arts organization in Bristol, UK). It is currently divided into the following main sections: the dump where all digital media is collected but remains unorganized; a number of tools, such as hierarchical blogs and wikis that are available to select and organize materials; an archive that also draws upon the materials in the dump and organizes them in a systematic manner; and finally, the curated collection of online projects. The sections correspond with levels of control and degrees of user feedback using common data.

Consistent with these principles, *antisocial networking* is a current project: an online repository for the submission of new and existing works that explore the pseudo-agency of online social platforms. It takes a number of recent software projects as its inspiration (see image above) to reflect upon the fashion for 'participation' with the arts sector and culture in general. The concern is how the Internet is increasingly characterized as a 'platform' (or collective machine) for 'social' uses, but to question what is meant by the terms in such descriptions. Emergent curatorial forms (using social technologies) are undoubtedly dissimilar to the ways in which social relations have been traditionally organized, but, in general, appear to reinforce existing power structures.

According to Ned Rossiter, there is an urgent need for new institutional forms that reflect 'relational' processes to challenge existing hierarchical and centralizing systems.[1] In contrast to what he calls 'networked organizations', emergent 'organized networks' are horizontal, collaborative and distributed in character offering a distinct social dynamic and new forms of agency appropriate to networks. The difference, not least, is how they have responded to developments in networked communications technology and the issue of intellectual property rights: on the one hand, using this as a regulatory mechanism to enforce or extend existing power structures, and on the other, advocating a loosening up of property rights. The contradictions between these characterizations reflect the political complexities and uncertainties associated with sociality and life in general.

The potential to transform social relations is somewhat demonstrated in the dynamics of social networking technologies. But it is the institutional nature of this, as a description of the organisation of social relations, that makes it a thoroughly political issue and the reason why the many popular examples can be seen to be deeply compromised. Organized networks evidently represent relative institutional autonomy but they also need to operate tactically, engaging both horizontal and vertical modes of interaction. Rossiter stresses the point: 'The tendency to describe networks in terms of horizontality results in the occlusion of the "political", which consists of antagonisms that underpin sociality. It is technically and socially incorrect to assume that hierarchical and centralizing architectures and practices are absent from network cultures.'[2]

The plurality of nodes in, or apparent openness of, networks does not guarantee a more inherent democratic order, indeed it is arguably serves to obscure totalitarian substructures. This is the trick of social networking, not least, in the way it offers the promise of democracy but through centralized ownership and control such that the web platform itself mediates relations — unlike peer to peer file sharing for instance. Crucially, the software and the knowledge to shape it, is no longer stored locally on the user's hard drive but through the browser interface (and in this sense amateur production does become a pressing issue of lack of access to the means of production). Network power can also be seen in the ways work is reconstituted and how as a consequence of more emphasis on socialized and communicative work, new management techniques tend to stress horizontal rather than hierarchical organizational structures. As with the discussion of network control, this in itself is a technique of power that Maurizio Lazzarato takes to be more totalitarian than the production line, as it involves the willing subjectivity of the worker in the process.[3] This reflects the operations of 'open' social networking sites where social relations are produced as friendly rather than antagonistic. As the market outsources manufacture to its consumers, it resolves the contradiction between producers and consumers. It 'tends not to sell any product at all to the consumer, but rather sells the consumer to the product' as Juan Martin Prada puts it.[4] The worker-user voluntarily generates themselves as complicit with the user-generated content they produce. A shift is required in rethinking the social as a shared and common definition of what it means to be part of the same collective.

There is a need to identify the invisible architecture of the network and its protocols locked down by proprietary interests in order to make it more open, participatory and more public. For instance, peer production offers a challenge to definitions of social wealth: a distinction between revenue and benefit sharing that the commons is founded upon. A peer to peer system in this respect might be considered 'post-capitalist' in the production of a social relation based on sharing and the common good.[5] In such descriptions, terms like social networking holds the potential to transform server-client relations into peer to peer relations but only if held within the public realm, outside of private ownership and as part of

the commons. In contrast, the rise of social networking as we know it with its participatory ethic has been largely stolen from free software development — interpreted by Dmytri Kleiner and Brian Wyrick as 'capitalism's preemptive attack against p2p systems'.[6]

Curating needs to engage these socio-technical dynamics that seem to be encapsulated by conflicts over sharing digital content, such as those over peer to peer filesharing set against normative server-client relations. This is important, as without the identification of antagonisms that underpin sociality, politics simply cannot be engaged. The *project.arnolfini* site advocates an approach that engages both relatively open and hierarchical models of curating in keeping with the observation that sovereignty and networks are not mutually exclusive.[7] The logic reflects the socio-technical architectures of network power in which the curator plays their part. As such, the project is a work in progress.

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project.arnolfini can be found at http://project.arnolfini.org.uk/

1 See Rossiter's *Organized Networks*.

2 Ibid. p. 36.

3 Lazzarato, p. 142.

4 See Prada's 'Web 2.0 as a New Context for Artistic Practices'.

5 According to Bauwens, this represents possiblities for a new social order in which the commons relates to the market based on post-capitalist principles of value creation and sharing.

6 Kliener and Wyrick, p. 16.

7 That sovereignty and networks are not incompatible is the core of the argument of Galloway and Thacker's *The Exploit*.

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Folksonomies as Social Curating: The *I tag you tag me* Exhibition Case

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I tag you tag me: a folksonomy of internet art (http://www.del.icio.us/I_tag_you_tag_me) is an ongoing project developed in 2007, specifically for Vienna-based CONT3XT.NET's project *TAGallery*. The point of departure for this exhibition was assuming tagging (within the context of internet art) to be curating, or more specifically, social curating. The concept of tagging as curating is derivative of a previous project, *Source Code*, which addressed the issue of blogging as curating.

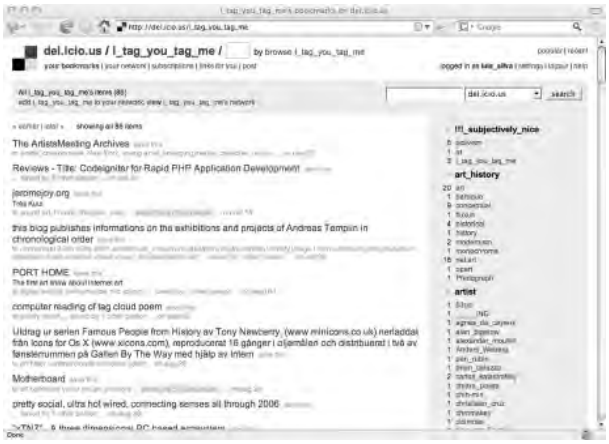

Figure 1: *I tag you tag me*, screenshot of the project home page

A tag is a relevant (meaningful) term assigned to information, in this particular case an artwork, describing it and allowing its categorization. Tags are generally chosen informally and subjectively by the author and/or by the community it addresses. Social tagging, through softwares such as del.icio.us (*I tag you tag me* assumes the form of a del.icio.us account) allows for the creation of metadata, or folksonomies, where a new layer of meaning is socially constructed and shared.

If tagging creates metadata about pre-existing content, it can be seen as the creation of a discourse about it. And if that content happens to be an online artwork, tagging both allows for a subjective juxtaposition of art works and the elaboration of a critical discourse about it. Hence, tagging can be seen as curating.

Rather than having one individual traditionally curating a show through tagging (the concept of the curator as the one who has the power to include or exclude), people were asked to tag some of their favourite Internet art pieces with a few defined tags and some that they could choose freely (the concept of open curating, where the

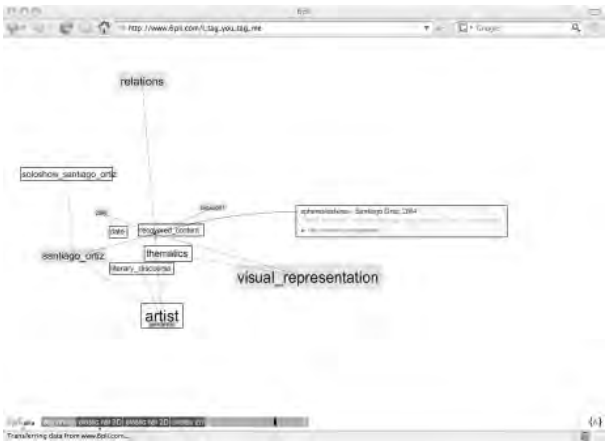

Figure 2: *I tag you tag me*, alternative view (through the use of 6pli software, contributed by artist Santiago Ortiz).

power is shared by those who participate). Besides tagging Internet art works, participants could also organize the categories (tags) into overarching categories (bundles), or even delete content (both artworks, tags or bundles). The idea was that this device would then create a folksonomic net art exhibition done collectively by the collaborative action of a group of people.

Information Must be Free to be Effective

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When analysing the need for free information, it is usually addressed from an ideological stance rather than the perspective of efficacy.

When quoting Stewart Brand's now legendary claim that 'information wants to be free', we often overlook the wider context in which it was originally made: 'On the one hand information wants to be expensive, because it's so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time. So you have these two fighting against each other.'

Consequently, this need to be free does not respond to ideological concerns, but to a need to be effective. Shared information in circulation produces a performance or output that is the real value of information. Information that is not in circulation has no value and our duty is to identify the dynamics that best increases the value of information. The modes and structures of cybernetic thinking are based on the principle that shared knowledge allows us to move forward as thinking societies at an exponential rate. We generate knowledge, but it is in sharing it that we actually produce social capital and wealth.

We ought to embark on a more pragmatic and de-ideologised analysis in which the efficiency of strategies prevails over ideological criteria and old structures. In other words, a strategic efficiency predicated on sharing knowledge, with the necessary technical and legal means and structures to enable its realization, in order to generate more knowledge, and consequently, more capital. The liberal context on which the current world is largely underpinned, and this is even more true of cyberspace, as recently argued in an article by José Vidal-Beneyto, ensures that the 'conjunction between the individual's goals and social fulfilment is accomplished in the exchange of goods and services [such as information], whose egalitarian effectiveness resides in the elimination of hereditary power groups and classes who fake this exchange and perpetuate injustice.'
At the current moment in time, it is obvious that these 'hereditary power groups and classes who fake this exchange and perpetuate injustice' refer to those old corporations and states implementing old rules and privileges over information, putting those acquired privileges before efficiency and the need for social development. The challenge of 'free information' is to convey to society this idea of efficiency, in opposition to the preservation of the interests and privileges of outmoded oligarchies of capital and knowledge. This is a question of modernity in which citizens, as free human beings and in their own right, pursue and develop structures, both technical and legal, in order to achieve the best social development for the happiness of the individual.

Information must be free to be effective, otherwise it has no real worth except for its speculative exchange value; the challenge consists in how to introduce society, and consequently, corporations and institutions, to this new economic approach, simultaneously reconciling the struggle underscored by Stewart Brand.

Hack-able Curator

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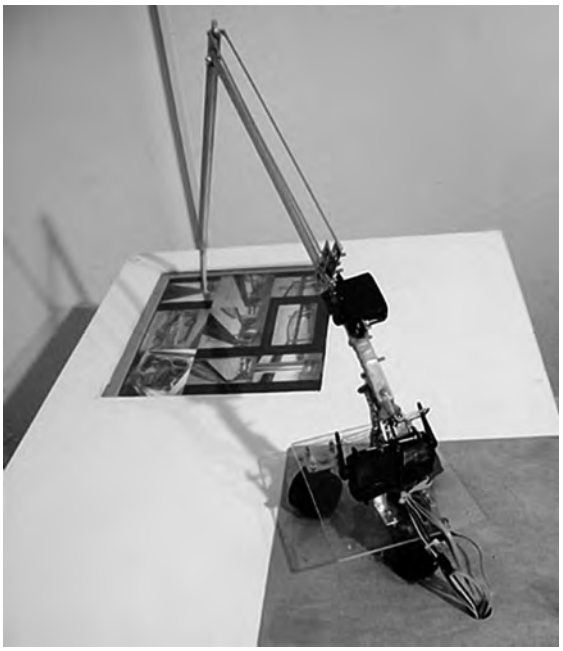

This short essay analyzes the social and cultural implications of the work *Hack-able Curator* (2007) (http://www.hackablecurator.org.uk/). It is an interactive physical installation using robotics, a search engine of the *Flickr* API, and mobile messaging.[1] It makes curatorial decisions by using an algorithm that allows it to choose images from the popular photo-sharing website *Flickr*. The online module searches *Flickr* for the best images containing the tags *Slow* and *Plymouth*, so that it can use them in a virtual exhibition. It is 'hack-able' because everyone can both add images to the main resource by uploading them to *Flickr* or vote for any images displayed on the website by sending an SMS message to the system. Even if an image is chosen, there is an opportunity to opt-out, and the choice is displayed on this web site.

The project was developed by Anita Barwacz, Lyndsey Bedford, Andy Bennett, Anaisa Franco, Martha Patricia Niño and Richard Wilkes. It was exhibited at Plymouth Arts Centre as part of the *SLOW* exhibition, from January 19 to March 18 of 2007. The *SLOW* exhibition, as stated by Colin Searls,[2] is about how "slowness" is considered to be less a reluctance to move, but considering what is at stake. Without slowness, the actions tend to be impulsive. *Slow* is against the instrumentalization of arts and artists. With that in mind, Searls asks: What does it now mean for art to be socially engaged? *Slow* has been curated taking into account mass production in contemporary art and the subversion of culture into mass entertainment.

Hack-able Curator does not intend to automate and industrialize the curator's tasks, but to commentate about collaborative and open systems that can search, catalog, archive, and evaluate information. This is done in a post-industrial, post-human and fast-paced age, in which people are overloaded with too much information, having not enough time to process it. Curators usually take their time to do research, but is it possible to curate in real time? Human curators usually have an extensive background in arts and take some time to digest the information they gather from their research, using their own archives, collections, libraries, Internet tools, and even collaborative curatorial practices. All this in order to create, remix and produce a guided display of artworks. This activity is considered by some as an art in itself, since it creates the possibility for new meanings.

Even while we live in a post industrial society, *hack-able curator*'s robotic arm is still there, ironically pointing at the pictures and reminding us of both the physical aspects of curating and the non obsolescence of our bodies. For Marshall McLuhan, technological progress has a crucial effect on artistic development, because inventions materialize what previously only existed in our imagination. But for Umberto Eco, art offers an alternative to media power[3] and a way to hack it. For example, Internet introduced the aspiration for more participatory curatorial practices that use blogs, wikis and other forms of collaborative writing, net art also promised a museum without walls, and now you can see virtual exhibitions created by members of the *Rhizome*[4] online community, among other famous initiatives like *Runme*[5] and *TAGallery*.[6] This immediately points out the problem of the de-substantiation of the art object

and the old problem of what is real. Are those virtual immaterial objects the digital versions of the archetypes wandering outside Plato's cave? Are we taking fiction as reality? *Hack-able curator* signals the tensions existing between the restrained and finite physical space of the gallery and the open infinite virtual space of the Internet, so it also works as a curatorial interface between physical and virtual environments. In this sense, it can be seen as a meta-artwork that tries to usurp the role of the exhibition's local curator. As Joasia Krysa[7] also emphasizes, the Internet defies existent categories of cultural production, such as fine arts, pop, education, entertainment. Even if the categories shift, authority is never abolished. In this process, immaterial labour has privileged the process over the product. This crisis of categories poses a challenge for the criteria in judging what art is or is not and the limits between artist, curator and artwork.

On the other hand, this work is also concerned with: what is to hack something? McKenzie Wark[8] defines a hacker as a creative person, regardless of his/her coding abilities. To create is to hack, and in his terms, creativity is always a collective act. Erkki Kurenniemi[9] tells how electronic music emerged by hacking devices built for other purposes. This process implies more than the mere disruption of rules, algorithms, institutions, and access to information. This activity takes place in a realm without scarcity, in a world that is overloaded with information, but not necessarily with meaning or knowledge. Hacking is a practice that, since its original manifesto of 1986, is related with the aesthetic and networked pleasures of the 'baud', curiosity and the dream of an unlimited search for knowledge. Hacking is also seen as a class struggle, the wide known motto 'knowledge is power' is implied when McKenzie Wark talks about a redefinition of society's class structures around who owns the information. The vectorialist class is made up of those postindustrial individuals in charge of turning information into a commodity. A hacker, on the contrary, sets information free as a gift, in an exchange economy in which a reciprocal action or reward is expected. Hacking is not only about breaking a device in order to create a new one, but also about breaking the traditional meaning, that is, creating a valuable metaphor.

The traditional task of the curatorial criteria for an exhibit can be seen as a guide in order to discover the meaning of a particular event. It is a symbolic task. On the contrary, a regular computer application that indexes information has to do more with quantitative aspects of information, measurable and objective quantities for a wide range of parameters that can include author, historical period, year, place, technique, dimensions and keywords. The hacking of codes and algorithms for indexing archives is good, but how can you reproduce an 'objective' human judgment of criteria about what art is? Ever since the invention of the alphabet, we keep creating semantic codes in order to communicate, but once we face new technologies, we need to learn new codes and delve into their language/syntax, so it might be worth to study the grammar and symbology of tagging and metadata closely. They will definitively play a relevant role in the shaping of current curating. This process can be seen as an artistic practice itself, since it can be considered as another creation that takes the work of other artists as starting point. In this connection Trebor Scholz suggests: 'Curators become meta-artists. They set up contexts for artists who provide contexts. The model of the curated website has become a useful recognition mechanism. In media art, many cultural context providers function in various registers, including that of the curator. However, the once clear line between curator, artist and theorist is now blurred.'[10] Then it might be also possible to think that one day the line between artwork and curator will be eliminated as well.

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1 See: http://www.hackablecurator.org.uk/; http://rhizome.org/fp.rhiz?id=3213; http://www.dorkbot.org/dorkbotbristol/?p=37; http://transition.turbulence.org/blog/?s=hack-able+curator&x=9&y=11

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5 http://www.runme.org/

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Panel: Intelligent Architecture

Contributors to the panel: Paul Thomas, Mike Philips, Chris Speed, Shaun Murray

The Chemist as Flâneur in Intelligent Architecture

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The paper draws on the author's experience of a collaboration leading to the development and manifestation of the i-500 Project. The i-500 project is a public art commission for Curtin University's new Minerals and Chemistry Research and Education Precinct. The paper explores the potential for contemplation and reflection to be used as critical and enabling tools. The implementation of intelligent and responsive architectures will be used to transform the buildings scientific community into contemporary flâneurs.

The large-scale visual projections and the multiple auditory function of the artwork, reveal to the scientists and other occupants, a dialogue between their research community and an artistic translation of the dynamic data from physical and social interactions within the building into a volatile and evolving interactive artwork.

The i-500 system feeds off the activities of the research community, interpreting social flows of the occupants, whilst reading data supplied from the building's technological infrastructure. The work itself will have its own autonomy and exist independently of the technologies used to make it seen and heard. The project team anticipates the i-500 generating subtle and emotive experiences that can transcend this text through the evolving, dynamic and interactive software and network.

Charles Baudelaire is credited with firstly describing the flâneur in his 1863 essay *The painter of modern life* (Coverly, 2006 p 58). The role of the flâneur is someone who is part of the city by immersing themselves within it. The flâneur evolves his understanding of the city space over time and reflects the city as well as being reflected by it. The flâneur lives out a role of the 'detached observer who becomes intoxicated' by the cities movement (Coverly, 2006 p 58). The role of the flâneur transformed the city space into one where the urban wanderer seeks to find 'the true nature that lies beneath the flux of the everyday' (Coverly, 2006 p 13). The flâneur explored the space between the macro and the micro to evolve through a phsycogeographic[1] exchange.

The concept of being confronted by the advance of modern technology is not new. In Baudelaire's story *The Lost Halo* (1862), an artist loses his halo whilst crossing the street in a modern city: 'I was crossing the boulevard, in a great hurry, in the midst of a moving chaos, with death galloping at me from every side' (Berman 1983: 159).

Marshall Berman demonstrates: "The archetypal modern man as we see him here, is a pedestrian thrown into the maelstrom of modern city traffic, a man alone contending against an agglomeration of mass and energy that is heavy, fast and lethal" (Berman 1983: 159).

This account by Baudelaire demonstrates the social change that had taken place, whereby the flâneur confronted with the modern city, can no longer maintain the role of the detached observer. The machinic age is dealing more with the transfer of quantitative data that can be controlled, packaged and exported.

Lissa Roberts states that as the eighteenth century was drawing to a close:

> chemists increasingly subordinated their bodies to the material technology of their laboratories and began erasing the presence of direct sensory evidence from public records of their discipline's literary and social technologies.

Roberts demonstrates the ubiquitous nature and reliance on the machinic to be able to understand contemporary living. The i-500 artwork's potential is to represent the visualisation of quantitative scientific research as part of the architectural environment. The visual and auditory function of the artwork reveal to the chemists a qualitative temporal experience of their research. Nested at the physical building's heart, in an area that acts as a central hub for the social interactions of the scientific

community, the i-500 enables a zone of contemplation and reflection. The system evolves through a dialogue between the research community and the translation of the dynamic data from physical and social interactions within the building.

The i-500's dialogical evolution will act as an antidote to the contemporary forces that propel our comprehension of generative scientific research data. The constructed mediated understandings of the future are witnessing an every increasing collapse of physical space in favour of data space. These forces were developed in the eighteenth century where chemists were relying on mathematical and technical data over their senses in understanding material properties.

The contemplative mirror of the i-500 project sets the stage for the chemists flâneurs, enabling them to amble through the space whilst perceiving subtle rhythms or recognising complex patterns. The i-500 allows for the consideration of the subtle qualitative aspects of being human in the face of emergent technology. The mathematical contribution of quantitative data is seen here as the source material for a reconfiguration of a sensory experience.

The building highlights the need for researchers within i-500 to use the agency of their bodies with the world as a natural part of any scientific investigation. The user's environment subconsciously informs a phenomenological understanding, that in turn will inform the interpretation of mathematical data.

The i-500 audio visual presentation will perform a vital and integral role in enabling the role of qualitative scientific research in the fields of nano chemistry (atomic microscopy and computer modeling), applied chemistry, environmental science, hydrometallurgy, biotechnology, and forensic science.

> Visual representations do things: they can sit quietly and be observed; they may aid in the performance of some activity, let's say, in science; they may act as repositories for previously compiled information; they may, through the format of their presentation, guide users or readers toward new ideas, or new practices. In science, and in chemistry particularly, visual representations are vital components of the material culture of practice. (Cohen, 2004 p 41)

Benjamin Cohen suggests the visual function of an artwork reveals to the chemists the material culture of practice. The enriching experience can act as the chemist flâneur wanders by the artwork in the central foyer creating 'repositories… guiding the users or readers towards new ideas, or new practices'. (Cohen, 2004 p 41) The work also has the potential to filter through individual computer screensavers creating an audiovisual reverberation of the work that can spread between buildings.

The visualisation of all the collect data displays the sum total of its parts being processed to form a whole context. The chemist flâneur is exposed to rhythms and pattern recognition that will be personified through the flâneurs presence in the artworks. The chemist flâneur is in a loop where the research is transformed into a sensorial experience generated from the formulaic mathematic principles that shift the chemist away from the embodied experience. The generative durational visualisation creates a diary of the users interface with their architectural environment. The visualised data from the various research related inputs through contemplation and reflection can create architectural awareness that can redefine the space for the chemists to re-absorb the social.

The chemist flâneur is confronted in the i-500 project with a controlled conscious melding of the quantitative aspects of contemporary chemistry with its traditional sensorial aspects. By constructing the chemist as a flâneur, two major shifts are confronted, in which the quantitative and the qualitative are brought together through the imprint on the architectural surroundings.

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1 Guy Dedords oft-repeated definition of pschogeography describes 'The study of the specific effects of the geographical environment, consciously organised or not, on the emotions and behaviours of individuals'.

2 Coverly, M. 2006. *Psychogeography*. Harpenden, Pocket Essentials.

3 Berman, M. 1983. *All Thats Solid Melts Into Air: The Experience of Modernity*. London: Verso.

4 Roberts, L. 2004. "The Death of the Sensuous Chemist: The 'New' Chemistry and the Transformation of Sensuous Technology". *Empire of the Senses: The Sensual Culture Reader*. D. Howes. Oxford, Berg Pres.

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Base Data for/to Model Behaviours

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This paper discusses the emergence of 'data' as a building material, integral to an architectural manifestation and the detritus of human occupation. Having evolved from a quiescent by-product of CAD systems and galvanised as a substrate of the 90's 'uninhabitables' data are increasingly playing a critical role in our tacit understanding of our relationship to each other and our environment, whether local or global, built or 'natural'. As a material malleability of data makes an ideal canvas for painting future vistas yet being equally flexible in providing the antithesis of the 'Emperors New Clothes', the garments are so frightening everyone pretends they are not there.

This paper focuses on the models provided by Arch-OS (www.arch-os.com) and the i-500 Project (www.i-500.org). The role data plays in these installations is critical to the manifestation of the various technical and creative interventions. Arch-OS, and its implementation as the kernel of the i-500, provides temporal information from interactions within the buildings and in the process of manifesting these behaviors generates complex, dynamic data models. Data generated by the buildings interactions with and the activities of their inhabitants is important, not just because of the generative and dialogical nature of the dynamic, but more significantly, because the streams of data generate a temporal genetic architectural grammar. The temporality is significant because it offers real-time responsive modelling possibilities (as harnessed by many of the art works), and the genetic grammar important because it allows specific data sets or objects to be identified, inherited and transmitted. Data models provide not just a mirror to reflect the buildings activities, but a mirror with memory that facilitates comparison between past and current events, enabling simulation and predictive possibilities. To some extent the physical buildings embody the multifarious dynamic tensions described by Kwinter.

> "… the consideration of dynamical phenomena or dynamical morphogenesis, toward geometries or patterns that are not static but appear only over time… the study of phenomena no longer in analytic isolation but as embodied within a rich and unstable milieu of multiple communicating forces and influences…"
> (Kwinter, S. 2001)

The Arch-OS and i-500t core system can be seen as a dynamic extension of the traditional 'architectural model', but one located in a real-time symbiotic relationship with a building that hosts it. Of particular interest is the intervention Arch-OS can make in these fields where the recursive relationship between the building and its inhabitants plays a critical role in shifting the focus away from easy and dubious assumptions made about the potential of 'intelligence'.

> "(…) instead that computation and computer augmented environments are psychosomatic extensions of their user/occupants, and that an ecological model of the user/environment relationship yields fruitful results. Countering the materialist view, this model embraces the cognitive role of the user rather than that of the building, and thereby inverts the priorities set by architectural and industrial discourse on IB (Intelligent Buildings) … The system supporting this environment, Arch-OS, was developed to serve both building systems and – more importantly –expand user awareness of their surroundings."
> (Anders, P., Phillips, M. 2004)

These works contribute to a contemporary discourse around information augmentation and ubiquitous computing. The emergence of practices that provide data trails for objects (barcodes, nutritional content, recycling) are commensurate with surveillance and security activities, the tracking and modeling of epidemics through food distribution and travel, and the dissemination of personal and environmental information. Arch-OS and the i-500 contribute to

strategies that embrace the notion of 'transformation' and evolution of form, a transmutation from solid to the immaterial, object to process and script to algorithm. These strategies intend to explore the manifestation of individual and social ecologies and aspire to have a direct influence on human behaviour, making a shift from the implied intelligence of a building to the responsible intelligence of its inhabitants.

> (…) people operate as a type of distributed intelligence, where much of our intellect behaviour results from the interaction of mental processes and the objects and constraints of the world and where much behaviour takes place through a cooperative process with others. (Norman. 1993)

A range of interventions have been made using Arch-OS that attempt to influence behaviour through the manifestation of data and a distillation of objects that engage social and mental processes: slowly moving robotic architectures (Sloth-Bot), performances,

Figure 1: GreenScreen, Noogy Installation.

installations and projections, culminating in the i-500 Project, a bespoke system for a specified audience, location and research environment. A strong ecological potential has emerged through the manifestation of the data harvested from the BEMS (Building Energy Management System) initiating: collaborations with the Bartlett School of Architecture and the Centre for Sustainable Futures, have constructed dynamic data manifestations using a 10m x 5m LED matrix screen (figure 1); the implementation of mobile tools for the incorporation of individual data (Social Operating System (*www.s-os.org*) and collaborations with the New Economics Foundation (neweconomics.org)); the construction of Arch-OS data feeds for Uniview (www.scalingtheuniverse.com) for inclusion in the global networked dome environments of the Elumenati (www.elumenati.com). These systems transcend physical architecture by activating and embracing social networks, with the potential to generate a revitalized tacit awareness of the world, and show symptoms of a possible slow change of consciousness brought about by a new relationship with data and their ability to provide alternative representations and a subtle experience of the world.

The fated Astronauts of the first Apollo Mission were monitored in real time as they were incinerated in their capsule as it sat on the launch pad. The accident report describes how the only information available to the ground crew came through the data collected through bio monitors attached to their suits:

> "The biomedical data indicate that just prior to the fire report the Senior Pilot was performing essentially no activity (or was in the baseline "rest" condition) until about 23:30:21 GMT when a slight increase in pulse and respiratory rate was noted. At 23:30:30 GMT the electrocardiogram indicates some muscular activity for several seconds. Similar indications are noted at 23:30:39 GMT. The data show increased activity but are not indicative of an alarm type of response. By 23:30:45 GMT, all of the biomedical parameters had reverted to the baseline "rest" level." (NASA. 1967)

The bland, mundane horror! Today we face a different kind of incendiary situation; the difference is that, through the plethora of real-time dynamic data, we are privileged to be both inside the capsule and simultaneously monitoring our own data as we burn — a phantasmagorical convergence of simulation and experience.

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Getting Over the Fence

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This paper examines the relationship between the concept of the 'social' within an aspect of architectural practice. It explores how the detachment of a building site from an urban context through the use of fences and boards inhibits architectures ability to engage with social networks. Using de Certeau and in particular, Latour's definition of the social as a critical benchmark, the author identifies the Arch-OS system as having a constructive methodology toward reconciling architectures use of digital systems in order to recover an integrated model of the social.

Architecture has been using computers for many years since IBM's introduction of the first commercial computer aided design (CAD) system for General Motors in 1963. Since then, the advent of networked desktop PCs has allowed small businesses and academic centers to use computers to share work around the clock and around the globe, as well as being able to work simultaneously on single CAD documents across a network. In 1990 Mitchell used of the term 'society of design', derived from Marvin Minsky's metaphor 'society of mind' to forecast how complex design problems may be solved through distributed actions (Mitchell et al 1990:489).

Nearly twenty years on, architecture has indeed absorbed technical procedures to improve the communication, management and ultimately profitability of designing and constructing buildings. However, any social attributes of networked design remained within the profession and only 'leaked out' through public and client consultation. A way of evidencing how architecture appears to mishandle social relations can be found in the contemporary practice of hiding new projects behind high wooden boards that encircle the entire perimeter of building sites. The practice of making new architectural projects invisible from an environmental space, so as to allow designer and engineers the opportunity to quarantine a project until it is ready for introduction in to society, is a deeply anti-social practice. This temporal separation from society designed to obfuscate a new building is a conscious act that limits the process of design and construction to take part in any existing or new opportunities for social discourse.

Whilst the practical deportation of a building site has obvious health and safety benefits, its impact on the human geographical fabric of the city is akin to Certeau's critique of a vacation as it prevents the stakeholders in the community taking part in the construction process:

> "Everyone goes back to work at the place he has been given, in the office or the workshop. The incarceration-vacation is over. For the beautiful abstraction of the prison are substituted the compromises, opacities and dependencies of a workplace. Hand-to-hand combat begins again with a reality that dislodges the spectator without rails or window-panes. There comes to an end the Robinson Crusoe adventure of the

> travelling noble soul that could believe itself intact because it was surrounded by glass and iron." (de Certeau 1988:114)

Certeau's despair of the holiday is surmised as a disengagement from a meaningful place, and his example of the workplace as a richer environment in which we can contest and engage with the production of space is comparable to the problem of cutting off a building site from its context. The choice to isolate a building as they are being built at a local address is akin to teleporting it away to a beach resort in Spain for the duration of its construction. Latour's model of the social through Actor Network Theory is also placed within a sensitive model of space and identifies the futility of understanding social networks from a distance, suggesting that only through close connection can social systems be nurtured and valued.

> "It's not that there is no hierarchy, no ups and downs, no rifts, no deep canyons, no high spots. It is simply that if you wish to go from one site to another, then you have to pay the full cost of relation, connection, displacement, and information. No lifts, accelerations, or shortcuts are allowed." (Latour 2005:176)

At present, the construction of buildings is distanced from its social and environmental context, if architecture wants to connect the social networks that are present in the construction of a building to local networks, architecture must find ways to shorten this distance between building site and people. With this in mind the author references the Arch-OS project as having practical strategies in getting over the fence that surrounds the building site.

Arch-OS and streaming the social

The author's experience of the Arch-OS system represents a methodological opportunity for digital systems to recover a social deficit within professional architecture. Although the system at the University of Plymouth was 'turned on' after the building had been handed over to the client, the use of the BMS (Building Management System) and computer networks represents the core of a potential creative strategy that satisfies some of Latour's conditions for a socially reflexive system. Latour reminds us that the social is best understood as the passage of relations across a network;

> "Society is not the whole 'in which' everything is embedded, but what travels 'through' everything, calibrating connections and offering every entity it reaches some possibility of commensurability. We should now learn to 'hook up' social channels like we do cable for our televisions. Society does not cover the whole any more than the World Wide Web is really worldwide." (Latour 2005/242)

Related to the Arch-OS strategy is Hou Je Bek's blog www.urbanxml.com which documents the growth of RSS feeds that trace human activity across the world. More strategic in its efforts to support architectures 'environmental' communication across digital networks is Haque's and Leung's 'Extended Environments Markup Language' (www.eml.org), which constructs protocols to support collaboration and exchange.

The formative work that Arch-OS and related systems have achieved in documenting the secret lives of buildings has began to provide the ingredients for evidencing the social networks that constitute spaces of work and play. The next challenge it would seem, would be to use these systems not just as visualizations of activity once a building has been built, but as systems to enrich the emergence of new spaces through pre-existing social networks and the networks involved in constructing a building. In this way, perhaps architecture and construction would benefit from not pretending that a building site is invisible, but by locating its development within the networks that define a society, which may in turn lead to new and challenging forms of architecture.

> "Once the whole social world is relocated inside its metrological chains, an immense new landscape jumps into view. If knowledge of the social is limited to the termite galleries in which we have been traveling, what do we know about what is outside? Not much." (Latour 2005:242)

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Recovering the Reflexive in Architecture

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This paper discusses the relationship between the concept of 'reflexive' within forms of architectural practice. It will explore how aspects of current architectural practice have used the development of notational systems, as a remedy for its own failure to engage with the concept of the reflexive within design.

Notation in architectural drawing

Before the fifteenth century the architectural drawing was thought to be no more than a flat surface and the shapes upon it were but tokens of three-dimensional objects. The Italian Renaissance introduced a fundamental change in

Bilboa project: looking down the Deba Valley

Bilboa project: source of the River Nervion

perception, establishing the principle that a drawing is a truthful depiction of the three dimensional world, and a window to that world, which places the viewer outside and in command of the view. 'The very word "perspective" means through seeing', writes Tom Porter. This 'through seeing' seems to suggest a relationship with environment through drawing as embedded and contingent. Robin Evans writes that 'Architectural drawings are projections, which means that organised arrays of imaginary straight lines pass through the drawing to corresponding parts of the thing represented by the drawing.' (Evans, Architectural Projection, p.19)

Whether perspective or production information, the architectural notational systems in current architectural practice refers to something outside itself. Its value as a notation is secondary to its primary purpose, which is to describe a building; therefore, it is usually seen in conjunction with other drawings, whether or not this leads to construction.

Through the relationship between notation in architectural drawings, the practice of architecture has rapidly changed. Through new techniques in drawing, communication and language allow even the most normative practice to enjoy complete freedom. This arbitrariness and lack of restraint that characterizes this new era of formal freedom raises questions about other paradigms that seek to rediscover the precisely determined, purposeful, or inevitable attributes of form. A guide would be to not clamber for control over these techniques and technologies but allow the architecture to become apart of larger systems through disturbing territories.

The ecology projects not only specify its structural changes; it also specifies *which disturbances from the environment trigger them*. According to Maturana and Varela, you can never direct a living system; you can only disturb it.

One is the notion of a building existing in the form intended as a result of complex inter-relationship with it, through it, or on it, where the building itself exists in the relationships between things, not the thing themselves.

The other is the reflexive space of the building itself through cause and action being triggered by the occupant or disturbances in the environment.

Current practice methodologies in contemporary architectural practice have become a series of systems of operations from planning through to building control and schedule of works. In the architectural model, the plan has become obsolete as a vehicle to understand the axis of information production towards the construction of a building and the axis of post building systems, which are incorporated after building completion. Through my own experience of working on projects in Beijing and Shanghai, parts of the architects' drawings had become redundant in the design of the building due to the speed and economic constraints of construction. This questions not only the relevance of drawing in practice but also the importance of communication in design. If this way of construction becomes a way of practice rather than the exception, we will need to find other means and methods of communicating our architectures.

One way would be to shift this relationship of drawing in practice to a different way of communication through a more complex and integrated notational system, that would allow us to examine the state of transfer from one medium, as drawing, to another, as environment through 4D holographic projections within the environment itself, on a real-time basis.

To have a complex and integrated notational system that relates directly to an environment would allow a series of palettes of information to be used in the planning stages of the series of systems of operation in architectural practice. If this system is related to the planning stage of the process in architectural practice, we could have an open sourced and integrated model that would nurture intelligence with the inhabitants.

Buildings have often been studied whole in space, but never before have they been studied whole in time. My interests reside in a synthesis which proposes that buildings adapt best when constantly refined and reshaped by their occupants, and that architects can mature from being artists of space to becoming artists of time.

The word "building" contains the double reality. It means both the "action of the verb BUILD" and "that which is built" – both verb and noun, both the action and the result. Architecture may strive to be permanent, but a building is always building and rebuilding. The idea is crystalline, the fact fluid. Could the idea be revised to match the fact?

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Panel: From East to West — Computer Animation Education in China and the United States

Contributors to the panel: Hui Zhu, Bruce Wands, Sven Travis, Xiaobo Lu

From East to West — Computer Animation Education in China and the United States

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Abstract

This paper contrasts the different approaches to computer animation education in China and the United States. The intent of this paper is to discuss the state of animation education in China, and to consider the value of such an education in academia or in the animation industry. American universities tend to position themselves either with industry or with a fine arts/experimental approach. Animation education in China is currently in an ambiguous stage. By comparing approaches in China and the United States, possibilities for clear pedagogical/curricular trajectories for Chinese students entering the field of animation can be identified. Because animation education and industry in both locations is being drastically affected both by increased power of and access to digital tools, as well as by alternate dissemination venues (DVD, web, cable, and mobile), this is an opportune time to debate this topic.

Historical background

In the United States, the animation industry has been present since the early 1900's. Traditionally, animation training took place in the studios under a master/apprentice system. As educational interest in animation grew, animation programs appeared in American colleges and universities.

In comparison, the animation industry in China dates only to the 1950's. Animation as a field of study and as a major in universities only surfaced in China recently (during the 1980's). The Chinese government has increasingly supported animation education and the animation industry since the mid-1990's (there are now 1,250 universities and schools that offer animation courses).

Many animation firms with a global presence are headquartered in the United States. When hiring employees, these American animation companies look for graduates with sets of specialized skills — often they prefer candidates with several years experience in the industry.

In China, animation studios with a significant presence are either part of the state-sponsored television and film industry (such as China Central TV's animation department), or private companies that operate under contract with foreign firms. Animation companies in China seek graduates with multiple proficiencies who can be involved from initial design to post-production tasks.

In both China and United States, the animation field is growing quickly. The genre has expanded to include feature films, television, games, and commercials. Distribution venues now include the Internet, cable TV, and portable devices. In both countries, animation education must balance instruction in marketable skills with creativity and academic research.

Animation education in the United States

Typical American computer animation curricula include training in traditional principles of animation such as motion drawing, character, and cell techniques, as well as instruction in mainstream 3d packages such as Maya and/or 3d Studio Max, including modeling, rigging, texturing, lighting and rendering. Approaches to animation education vary between art schools and universities. Art schools use more part-time faculty who are professionally active in the animation industry. This ensures that instructors possess real-world understanding of industry processes and practices, mirroring the traditional master/apprentice process. Such instructors may bring different emphases and approaches to the classroom, but they share a common industry-oriented focus.

At the university level, most faculty are full-time, and generally focus more on animation theory and research.

Clockwise from top:
Computer Lab, School of VISUAL ARTS, New York
Animation.Alex Feurer. Parsons the New School for Design
Animation Mirage. Youngwoong Jang. School of VISUAL ARTS 2006
Animation Simulacra. Tatchapon Lertwirojkul. School of VISUAL ARTS 2007

Some university faculty also produce animation. While there is some overlap, art schools generally provide a curriculum that is industry-aligned, while universities tend towards a fine arts/experimental approach, or towards scholarly/historical/critical activity.

Across all types of schools there is an increasing influence of non-traditional production and dissemination techniques. Flash, After Effects, Final Cut, and digital adaptation of traditional techniques (cut paper, claymation, stop motion, video collage, etc.) are shaking up the learning processes and the end result. That young animators are posting their work to YouTube years before they reach college age suggests the need for radical new learning pedagogies within higher education.

Animation education in China

In China, although more universities are teaching animation courses, there are limited employment opportunities for graduates (the Chinese animation industry is still young and there are few Chinese-produced original animation films). Instructors in Chinese animation programs tend to have a fine arts background and an artistic perspective, with little or any animation industry experience. Courses in animation theory also have little relevance in the current job market.

Students studying animation in China are extremely well versed in illustration. Most schools require applicants to pass an exam of visual art fundamentals, including drawing, color, and design. Incoming students excel in these areas. University curricula are focused on nurturing this assortment of skills into an artistic sensibility. This does not always jibe well with the need to master a variety of skills specific to the field of animation. Students often graduate with excellent fine arts skills, but with less animation-specific knowledge. Add this to uneven access to distribution platforms such as the Internet, and the disconnect between Chinese animation curriculum and the global industry is exacerbated.

Clockwise from top:
Computer Animation Lab, Academy Art & Design of Tsinghua University, Beijing
Animation Lab, Academy Art & Design of Tsinghua University, Beijing
Film Studio, Academy Art & Design of Tsinghua University, Beijing
Character Wawa. Hui Zhu. Academy Art & Design of Tsinghua University 2005
Animation Pig, Gong Zhang. Academy Art & Design of Tsinghua University 2006

The most common criticism voiced by animation graduates in China is the disparity between what they are taught and the skills that the animation industry requires. One of the most important approaches that the Chinese animation educational community could learn from American animation education is to provide a clear and strong relationship between the objectives and expectations of animation education and the actual application of such an education in the real world.

Conclusion

For animation education in China to develop and grow in meaningful and productive ways, three approaches may be suggested. The first is for Chinese universities to establish practical relationships with the animation industry, both Chinese and global. This will produce knowledgeable, experienced faculty and turn out graduates who can easily move into the industry and thrive.

The second approach is for Chinese universities to create projects that allow Chinese animation to develop its own distinct characteristics. All educators must rely on their country's history and cultural background, against the backdrop of worldwide industry. China has its own aesthetics and is able to display its arts in beautiful, interesting, and even striking ways that are different from the West. China also has a rich tradition of folk art, lore, and tales. All of these must be applied to the animation realm. Puppet theatre can be a fertile resource for the development of stop-motion animation. Traditional brush and line illustration brings tremendous possibility into time-based media (at the Academy of Art and Design at Tsinghua University in Beijing, traditional brush and line illustration has been incorporated into the animation fundamentals curriculum, resulting in a very innovative course).

Finally, animation programs in China would benefit from increased interaction with universities in the United States and other countries. Shared classes and projects — possibly even industry sponsored, would be of great help. Any exchange in the fast-changing animation sphere benefits both sides. Building shared academic pedagogies and distributed learning internationally will move Chinese universities into a global exchange, critical when interacting with an animation industry that is international in nature.