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ISEA2002, 11th International Symposium on Electronic Art, NAGOYA [Orai]

電子芸術国際会議 2002 名古屋［往来］

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Preface

Welcome to ISEA2002 NAGOYA!

Thank you for your paper presentation from various fields and for your participation in the panel discussions. We welcome you to this event with much enthusiasm and excitement. We hope that the ISEA2002 Nagoya will produce fruitful discussion and broaden the way of thinking for electronic art.

ISEA2002 NAGOYA with the theme of [Orai] has the following goals.

- To provide a forum where various opinions "come and go (i.e. [Orai])" relating to electronic art and media art.
- To provide a chance for electronic art to mutually stimulate and corroborate on a "street (i.e. [Orai])" with various fields and sciences in close relationship, such as cognitive science.
- To provide a site to carry out experimentation within the increasing city "traffic (i.e. [Orai])" between the real world and virtual world.
- To provide a place for "contact (i.e. [Orai])" where people of Asian and Western cultures meet and realize their differences.
- To provide a place for "communication (i.e. [Orai])" where the citizens and those relating to art, communicate and promote mutual understanding.

Art, science and technology are more closely interrelated and strongly influenced by one another than commonly thought.

As seen in the history of photography progress, artists have continuously sought after new technology and realized it, and they have used it as new media for expression. Just as Leonardo da Vinci can simultaneously possess scientific sense, engineering technique, and artistic eyes and expression, new media art is expected to yield communication and merge science and art, some of which we have already glimpsed.

Pythagoras, a backbone of Western culture, defined the music of the spheres as follows. 'In the sole universe containing all things, an object moves in accordance with mathematical law, so that this movement brings about the harmony. Individual spheres form in line at the interval corresponding to the length of strings originating chords. From the movement of spheres, the music, in other words, the harmony of spheres will be born.' This is his principle. We already have the technology and media which provide us with heavenly music.

The Chinese have a word "天文" "tian wen": Characters (Letters) in the heaven, which is an analogy to the principle of Pythagoras.

How can we read and interpret the characters explaining the origin of the universe written on the heaven and the truth of the history from the ancient age carved on the earth, as shown in the phrase "仰以観二於天文一、俯以察二於地理一" "yang yi guan yu tian wen, fu yi cha yu di li": Look up in the sky and contemplate the characters (letters) in the heaven; and look down at the ground and meditate the laws of the earth, in "易経－繋辞上伝" "yi jing-ji ci shang zhuan": I Ching (The book of changes) – interpretive comments, part I, and how can we convert them into perceivable sound and color or the place and situation? Various sensors continuously catch new information about the heavens and the earth, and the net provides a place to share it. This is the theme of new media art. It is also the theme of ISEA2002 NAGOYA, which is [Orai] between the heavens and the earth.

Everything that exists is beautiful.

KOHMURA Masao
ISEA2002 NAGOYA
President of Steering Committee

On behalf of the Inter-Society for the Electronic Arts (ISEA), we congratulate the ISEA2002 organizers for presenting ORAI, the first ISEA symposium in Asia.

The realization of this event contributes to expanding the cultural diversity of ISEA, which is an important aspect of the ISEA mandate. Today, we see diversity emerging as a major trend in the international cultural landscape of media arts, as evident in the themes of many international festivals and conferences. ISEA, by its nomadic nature, is uniquely positioned to enlarge the discussions surrounding diversity by creating dynamic worldwide onsite exchanges.

Japan is highly regarded as one of the focal points of electronic arts practice. Japanese artists often present their work within the global framework of exhibitions and festivals. While the many significant artistic projects produced in Japan are enjoyed by wide audiences throughout the world, Japan is still a distant place for many people.

ISEA2002 provides the opportunity to invert the practice of exporting Japanese art by bringing the work of artists from afar to Japan, as well as inviting these artists to experience Japanese works within their own cultural context.

We hope that ISEA2002 Symposium becomes a gateway to widening the horizons of the Electronic Arts communities in throughout the world.

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Papers

Orai and the Transdisciplinary Wunderkammer

Michael Punt
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Abstract

Recent speculation in cosmology and the science of consciousness studies has been obliged to reconsider the concept of reality as an "absolute given" from which all laws can be verified. In string theory in particular, the dispute now hinges on the existence of ten or eleven dimensions in rippling membranes that discharge energy at the point of contact. In science of consciousness studies similar models have appeared in order to explain what one authority has called "the necessary moment of enchantment between planes of consciousness that produce awareness". Between the macro and the micro the daily experience of ordinary human beings has long needed the explanation of multiple realities in order to stabilise conflicting desires and constraints - the multiplicity of times and spaces that converge in a single individual have long been sifted between those that have a rational and scientific explanation (e.g. money, work, knowledge) and those that have an irrational basis (e.g. love, pleasure, and art). One convenient division of labour has been to assign the rational to the real and the irrational to the imagined. The inevitable realisation in scientific circles that the reality of the imagined has as an equivalent epistemological significance raises fascinating questions as it invites a sceptical reconsideration of the essential basis of knowledge.

While the radical shift in scientific thought provides the moment of profound satisfaction for those artists, designers and scientists who have long argued for a transdisciplinary world view, it also provides a moment of the greatest challenge as we begin to consider how knowledge might be extended, codified and distributed in a multiverse, and begin to reflect on the relationships between a text and a world to be understood when any given world is only defined by the temporary consensus dependent on an arbitrary episteme.

This short paper approaches the theme of Orai by first developing the claim that we exist in a multiverse of multiple realities by exploring some major turns in cosmology, and consciousness studies and then drawing on my own published work which deals with the quotidian multiverse. It then asks the question of how we might manage the new concept of "comings and goings, communication and contact as well as streets and traffic" at a time when the reduced world view that has provided the foundation of dominant opinion in the last half-millennium is unsustainable. In conclusion it proposes that visual analogy, in the sense that Barbara Maria Stafford and others have argued the term, points to both the new transdiscplinary strategies for research and education as it also places new responsibilities on the custodians of analogy during the half-millennium of the reign of reason - those for whom finding sameness in difference has formed an essential part of their methodology - namely artists.

The claim of this paper is that we live in a quotidian multiverse, that is a universe of many universes that occupy the same space and time, not as an exotic excursion into the realms of science fiction, but as an everyday experience that affects our social and economic interchange. The way that I want to argue this is by drawing on some of the startling work in consciousness studies as well as some of the things that scientists at the edge of science are fretting about – eleventh dimensions, the end of time, quantum foam and so forth. To do all this in twenty minutes or two thousand words is a tall order – so tall that even I will not attempt it – at least not in words. Fortunately however there is a visual analogy that may achieve what several thousand pages may not.

The Image

There is a familiar trope in English documentary films about Britain in the early 1940s started by, I don't know who, but followed by nearly everyone who made 'realist' films after John Grierson. Intended to show both the change and the constancy of the rural landscape, a cameraman in the cockpit of a small plane films a train on the tracks below. Sometimes, in a moment of sheer visual bliss the shadow of the 'plane moving along the same line as the train makes a perfect cruciform as the two slip through the idyllic grasslands, frightening sheep and cattle (usually to a soundtrack of William Walton or Edward Elgar). Sometimes there is a cut and then a point-of-view shot of a train passenger, head tilted watching the plane – now eighteen degrees off the first eye-line. Invariably this cinematic trope is intended to invoke a lost or forgotten past that, in all probability, never existed. It is an effective visual invocation of nostalgic longing because the train and aeroplane perfectly match each others track yet inhabit irreconcilably separate dimensions. The destiny of their parallel existences speak of the 'if only' sentiment of unrequited love that makes the past an Edenic melodrama. For all the schlock it is the perfect analogy for what I have called the quotidian multiverse; local parallel universes that thrive according to a different logic, brought together by a grand theory of big things called classical physics.

Now that we all know the trick of history is to re-describe the irreducible melange of the past as a grab-bag of discrete events, this trope for nostalgia can resurface as the perfect postdigital analogue for the transcendental promise of more than three dimensions – hence the irrepressible moment of jouisance. This postdigital joy is most profound when viewed in its most analogical, that is when light is passed through photosensitive chemicals on a transparent base to throw an image on a screen. The chimera becomes a reflection on and of the brilliant homology between the X Y of the railway track and the XYZ of the aeroplane's space, and the XYZ of the viewer and the XY of the film passing (like an express) through the projector gate. For classical film theorists I am certain that this provides the paradigmatic example of primary identification with the apparatus. Secondary identification with the subject is finally achieved in this story of irreconcilable dimensions by the edit: a cut between shots in which the view from the plane is exchanged for the point-of-view of a rail passenger.

There is much that has been said about the ideological effects of this way of cutting up the real in order to re-present it as an alternative reality, but what can one say about the gap between the frames of the film that sometimes means nothing more than the next image is about to be presented, and sometimes means that we have changed our very world view? What terms do we have to describe the infinite no-dimensional gap between the frames as our consciousness is switched from one immaterial world to another equally immaterial world? What can we say in the postdigital about the gap between one shot and another in a time-image that insists on the discontinuous dimensions in veridical reality? Once we factor in our own perceptions we may well wonder how many dimensions there are in the experience described above. Don't expect to count them – its like trying to work out where the cursor is on the computer screen: we know its X and Y but never its Z.

This example may have the ring of the old structuralist about it, but aside from that, one of the things that it tells us is that the human apparatus consents to a meaningful world of three dimensions based upon poly-dimensional experiences. This suggests that the reality of the analogical image is premised on the coexistence of multiple dimensions. Moreover, explaining some of the moments of pleasure may have something to do with a previous knowledge of, or belief in, a poly-dimensional world in which the tenets of materialism and modernism, on which that sort of representation is based, are playfully subverted. For the contemporary viewer – the postdigital voyeur of the past's nostalgia, this moment of pleasure becomes extended as we experience the recovery of the relevance of the principles of similarity, congruence and continuity in digital media in the persistence of analogue representation as the paradigmatic representation of multiple realities.

Recently in the study of consciousness we seem to have reached a difficult moment trying to reconcile the electro-chemical processes of the brain with the rest of the reality, especially how a thought turns into action and a stimulus into perception. Consider this in relation to work in consciousness studies on precognition and the possibility that we have perceptions of events prior to their happening, or that random number generators have been shown to change their pattern significantly prior to major emotional disturbances. Or that particular brain patterns are observed prior to the onset of events that are likely to arouse hostility. Consider the notion that the world only appears to be classical because that is how we can best describe it, and consider your own motives for reading your horoscope and those of your nearest friends. In this short paper this evidence of the existence of other universes may not be entirely persuasive but this reflection does seem enough to at least posit the existence of at least a desire for a parallel other that is both a mirror and a challenge to the most tangible reality of first hand experience. If all else fails and the idea of parallel realities is still illusive, consider falling in love.

The problem that a quotidian multiverse poses is that to accounr for neurological change prior to an unexpected emotional stimuli, for example, calls for a new kind of explanatory system in which the perception of reality, the representation of reality, and ideology do not fit so snugly as they have for centuries.

Orai

A quotidian multiverse also calls for new techniques of social-motion management as we move between the puffing steam engine and the observing aeroplane. When we realise that we treat them as though they were a continuous condition, particularly in the digitised image, we are forced to reconsider the meaning of Orai – "comings and goings, communication and contact as well as streets and traffic" with new tools. This radical shift in scientific thought (manifest as either reckless speculation or dogged entrenchment in the profession) provides a moment for achievement in those artists, designers and scientists who have argued, through their practice, for new kinds of knowledge and new sources of digital authentication of the self to be regarded on an equal footing with the old analogue.

At this distance there is now little doubt that the digital revolution was, from its technological and conceptual inception, always destined to be the postdigital in which similarity, congruence and continuity found new applications. At stake in the postdigital analogue however, is more than the recovery of the subject: it is nothing less than whose vision of paradise prevails. A struggle in which the idealisation of representation is in conflict with the dominant technology which disavowed daily experience as an undifferentiated circulation of metaphors for desire and resistance. Things are different: we are now postdigital and biology has paradoxically not become more mechanical but much more aggressively organic. Where the digital proposed the perfect finite conditions for a perfect existence regardless of matter, (as for example in the human genome project), in the postdigital analogue (as for example in the ironies of genetic and wet biological art) human consciousness is regarded as almost infinitely malleable, able to shape its identity in response to local (and technological) conditions, aware all the time of the range of possible idnetities (digital and analogue) that are not developed.

What seems clear as we embrace the postdigital analogue – that is the post digital reality that is the object of our current analogous representation – is that we need new procedures, ones that are not obsessed with equivalence and difference but can finely accommodate the equivalencies of differences. The digital eventually gave us the moon shot and the machine in the garden, the postdigital analogue, on the other hand, points to a version of paradise that is not a finite discontinuous place or a non-homogeneous moment of time, not Eden in a nostalgic future, but a thick membrane in which local conditions, desire and resistance are constantly stabilised to form a whole identity.

The Cyberspace : the Space of "Orai（往来）"？

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Abstract

What is the future of the Cyberspace?

The word of "Orai" can be the clue of this theme.

The literal translation of "Orai" is "going and comingÓ So it means "traffic", "roadÓand "letter". "Orai-mono" (objects of Orai) was the example collection of letters used as a textbook of elementary education. It had a lot of illustrations and became an information booklet. "Orai-mono" was written in old epistolary style originally. It was the common style all over the country.

The space of "Orai" consisted in the network of highways. What a kind of culture did the space have?

The great haiku poet, Matsuo Basho moved on the highways frequently. The haiku came out of linked poem. Basho went on a trip in various places and made collection of linked poems with cultured men of the lands. One of his most famous works is "Oku no Hosomich (the Narrow Road to the Deep North)", the diary of his trip of Japanese Tohoku region. However, he went on a trip into deep space of literature rather than into real Tohoku region.

Originally Japanese literature develops from love poems commuted between man and woman. These songs created rich stories, for example, the tale of Genji, and invented the world of symbolic Japanese poetry. In the literature world the people were always conscious of intertextuality.

The space of "Orai" was a kind of virtual reality of texts and images. It may provide a clue as to how the Cyberspace is and will be.

(1) "Orai-mono" developed from an epistolary style example collection into an information booklet with illustrations. From the information exchange, the Internet built the objects of texts, images and sounds.

(2) "Orai" is not a network of one-way communication from the center, but a network of interactive communication. The Cyberspace exists in an interactive communication network.

(3) The epistolary style Japanese used in "Orai-mono" was a kind of a common language. English used in the Cyberspace will be a common language such as Koine or Latin. It may change into a simpler form for communication.

(4) The world of "Orai" was that of multilayer of texts and images. The artist was an editor interweaving the past works of art. In the Cyberspace quotation and editing of various contents is important. The creativeness in editing will be pursued.

(5) The subjectivity in the world of "Orai" exists in the intertextuality. In the Cyberspace, people communicate through a computer mutually. Our subjectivity will emerge in turning the communications into the one symphony.

Making Sense of Orai

Roy Ascott
caiia-star

Abstract

Pathways in the Net, let's call them hypertracks*, are like pathways in the brain - non-linear, associative, bifurcating. If we apply hypertracking to the rubric "ORAI" we are led geographically from Nagoya to Lithuanian, to Brazil by way of Portugal, to the Pays Basque, to Poznan, to Italy, finally with a little twist to New Mexico. This is to conduct a semantic routing. ORAI means weather in Lithuanian, pray! in Portuguese*, today *in Basque, it stands for* Laboratory of Operational Research and Artificial Intelligence *in Poland, and* Organización Revolucionaria Anarquista Insurreccionalista *in Italy. ORAI leads us to ORAIBI – for long the most important pueblo of the Hopi people who have lived there for over a thousand years. Old Oraibi, on Third Mesa, has the distinction of being the oldest continuously inhabited village in the United States.We could settle there a while. We are told about the Orai* Shinsatsu *(The New Correspondence Manual) of the Northern and Southern Courts Period in Japan, and we quickly see that with the slightest shift of intonation it becomes Orei - a cash gift made by Japanese custom to doctors as a token of appreciation. And that's just the first ten minutes of Net associative thought.*

Increasingly my thinking is net thinking, *increasingly the flow between my internal associations and my hypertracking is seamless. If I were not "always on" to the Net (which is to say always in the mixed reality of physical space and telematic space) – when I'm reading, on the phone, mobile texting, or in face to face seminar mode – I would loose half of my imaginative thinking capacity. Increasingly my better half is in the Net. So this marks out a phase space of a shifting landscape :* weather – pray! – today – Artificial Intelligence– anarchic insurrection*. Try triangulating these semantic loci. Then the scene shifts to* Hopiland – *where the most significant tracking motif has to be the ladder, linking those levels between the kiva floor ,and the sky altars, just as with the Hopi language itself -layered, stratified, stepped.*

What kind of thought landscape is constituted by this process? Where is the linearity of the enlightenment, the determinism of regulation science? All gone! A new kind of romantic revival is at work here, not the romanticism of self expression but that of self-navigation, of connectivism, a liberated, open-ended routing through the mind. But this mind is amplified by the computer, made artificially more intelligent, quicker, multitasking. More PDP dependent than centrally controlled, driven more more by contingency than will. Hypertracking through the Net , communicating and interacting as much as retrieving and depositing ideas in a state of telematic immersion brings us iclose to the mental activity of the shamans immersed in a psychic space of limitless dimensions, minds opened to a larger source of ideas, images and wisdom. Hypertyracking, web-wandering, these are ancient dreams, played out in the new numinosity *of cyberspace.*

Tekin-orai (a book with a collection of models for letter writing), in which woodworkers (right), lacquer and makie craftsmen (left) are depicted.
©Chikiriya-Tezuka-Man'uemon-Shoten, Nagano prefecture

This presentation *Making sense of Orai* will use search engines to set up tracks of image and text associations in a non linear peregrination around ORAI. It is intended to produce a kind of *open sense*, an overture to meaning rather than the presentation of a strict meaning embodied within itself. The process produces the elements on which a narrative might be built; a process of open-ended incompletion, which invites endless re-interpretation. As such I see it as a kind of one-person "*plissure du texte*" a textual pleating, parallel to the project by that name of distributed authorship which I set up twenty years earlier (but now able to juxtaposeimages): www.t0.or.at/~radrian/ARTEX/PLISSURE/plissure.html
This was a project involving multiple associative pathways for a narrative taking the form of the surrealists' *exquisite corpse*. In early 1983, I was invited to propose a work for the exhibition "ELECTRA 1983" - a survey of the use of electricity in art - organised by Frank Popper for the Musée d'Art Moderne de la Ville Paris. My proposal was to use the ARTEX network both as an organising instrument and as a textual medium for the creation of a world-wide, distributed narrative - a collective global fairy tale.

On July 13 I posted a description of the project and call for participation on ARTEX: artists and groups in 11 cities in Europe, North America and Australia agreed to join the project. In November each participant was allocated the role of traditional fairy tale character: princess, witch, fairy godmother, prince etc.. Beyond the simple idea of a fairy tale, I did not suggest a story line or plot - the artists were simply asked to improvise. The result was that, due to the differences between time zones and the nature of improvisation, the narrative often overlapped and

fragmented in the manner of the surrealist game of "Exquisite Corpse".

La Plissure du Texte. (top left clockwise: Roy Ascott (Paris); Hank Bull (Vancouver); Robert Adrian (Vienna); Eric Gidney (Sydney).

La Plissure du Texte was active on line 24 hours a day for 12 days - from December 11 to 23, 1983 and, although every location should have an identical copy of the complete text, for some unknown reason all versions are somehow different - there is no final or definitive version of the text. There is a version on line (rather fragmented and incomplete) that was captured on disc in Toronto by Norman White:
www.bmts.com/~normill/Texts/Plissure.txt
[*La Plissure du Texte was conceived by Roy Ascott, network organisation was by Robert Adrian, coordinators at the various locations were: Bruce Breland (Pittsburg); Hank Bull (Vancouver); David Garcia/Annie Wright (Amsterdam); Eric Gidney (Sydney); Helmut Mark/Zelko Wiener (Vienna); Greg McKenna/Tom Klinkowstein (San Francisco); John Southworth (Honolulu); Norman White (Toronto)].*

The following except from a track exemplifies the process of chance and association that will be adopted in *Making sense of Orai*. The passage is from the cry of Korean bus drivers, to luxury living in the Carribean, to oil spill contamination of indigenous Peruvians, to the "now" of the Basques, to yoga training in Uttar Pradesh, to the violation of rights in Bolivar - no more than one of the multi-linear tracks that can be set up in the vastness of the Net.

www.hankooki.com/kt_culture/200208/t2002080517000146110.htm
Before the late 1970s, Korean buses carried surprisingly large crews, which included a driver and two conductors _ one female and one male. At stops the women would stand by the front door and sell tickets while the male conductor would control the rear door. Young women with only primary education who came from the countryside to Seoul in search of a better life typically flocked to the profession. Before departing a stop, the female conductor was required to cry a warning ``Orai (All Right)!" and these loud cries still echo in the memory of many a Seoul citizen as the symbol of a bygone era.

www.caribbean-villasandcondos.com/villas/Villa%20Orai%20Bakia.htm
Villa Orai Baki, Orient Bay._Situated high up in Orient Bay park, the villa Orai bakia has spectacular views over the coastline of Orient bay and Tintamarre. Spacious and airy, the villa has 3 bedrooms plus an independent studio apartment. All bedrooms are air-conditioned with en-suite bathrooms. The Master bedroom has a king-size bed, walk-in closet and safe. The kitchen is fully equipped and open-plan to the living/dining area which opens onto 3 separate terraces, two of which have dining areas, and the third terrace has a large pool and seating area. The independent studio has a king-size bed, separate kitchenette and en-suite bathroom. Just minutes from Orient Bay beach with its great choice of beach bars, restaurants and watersports. This villa is ideal for groups of friends or families.

www.amazonalliance.org/update/2000/upd_nov00_en.htm
Peru: Oil Spill Causes Sickness in Indigenous Communities and Contaminates River . On October 3, a boat carrying 7,000 barrels of crude oil for Argentine-owned Pluspetrol, spilled over 5,000 barrels into the Marañon River, a tributary of the Amazon River. The accident has affected 68 communities in the Loreto-Nauta province. The oil spill has contaminated drinking water, and poisoned fish and animals. Communities are in urgent need of potable water and food supplies. Indigenous persons in the affected communities have reported migraines, intestinal infections, fever, vomiting, dizziness, eye pains, and skin sores after coming into contact with contaminated food and water. Although Pluspetrol has been fined by the Supervisory Body for Energy Investments (OSINERG), their efforts to contain the spill have been inadequate according to the Iquitos Regional Office of the Inter-ethnic Association for Development of the Peruvian Amazon (ORAI). To mobilize environmental and indigenous organizations to condemn Pluspetrol's irresponsible behavior and act to mitigate the effects of the spill, ORAI organized a march in Iquitos on November 10. Participants in the march pressured the government to conduct an impartial investigation of the accident and regulate oil companies to prevent future accidents. ORAI plans to perform an environmental impact assessment of the spill and file a civil suit against Pluspetrol to guarantee an effective clean-up and compensation for those negatively affected.

http://members.tripod.com/~bhave/yoga.html
Swami Parmananda. Yoga Shiksha Sansthan, Orai
Yoga Shiksha Sansthan is an independent institute whose main objective is to develop and provide educational and training facilities to students and teachers in Yoga, so that Yoga education using scientific methods can be provided to the people. 'Swami Parmananda Yoga Shiksha Sansthan' was founded in the memory of Yuga Purush Swami Parmanandaji Maharaja (Akhanda Paramdham, Haridwar, India). The institute is situated in Orai town of Uttar Pradesh in India

www.agamanawa.com/MIG.html
Violation of Human Rights. The bodyof Mrs. Panare Maria Flowers of the community of Colorado (Bolivar) was buried without the due permission by the Lauritas nuns and the Regional Office of Asuntos Indi'genas (ORAI). This is a sample of the violation of the human rights of the Panare natives who are seen as children incapable to make decisions on their relatives. The nuns and the ORAI instead of getting permission for the burial from the relatives, simply chose to bury it as if a wild animal without an owner .

The presentation continues the ORAI journey as chance dictates, and pulls down a background of continuously juxtaposed images.

White New Media Mythologies On Interacivity and Orientalism

Tapio MÄKELÄ

(no paper available)

Mobile Bristol

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Abstract

This paper describes the initial projects of Mobile Bristol, a collaborative initiative between industry and academia in Bristol, UK. Mobile Bristol is using the city space as a test bed for research into pervasive mobile computing and how context-aware information can add an extra digital dimension to augment physical surroundings.

Introduction

The Bristol Wearable Computing Project is a collaboration between the Computer Science Department at the University of Bristol and Hewlett-Packard Research Laboratories, Europe. To explore the potential of wearable computer devices and the integration of digital services and the physical world, together we have developed a suite of programs which use context sensing devices to enable relevant information to be delivered to the users of wearables.

Our current device is designed to fit in a jacket or bag. It consists of a small portable computer, batteries, a series of sensors and. networking hardware that enables access to a wireless 802.11 network.

This wearable enables access to a city-wide project that we have set up called Mobile Bristol, a test bed to take our research from the lab and into the public space. We have installed an 802.11 wireless network around the city of Bristol that will allow us to develop projects to enable interaction with this urban space in new and exciting ways.

Ideas for uses of the wearables combined with the network include commercial, touristic and educational (see wearables.cs.bris.ac.uk). For our first set of projects where we have worked in collaboration with artists and content producers, we are creating soundscapes that react to presence, sending location-dependent audio files to the wearable user. The designer of each soundscape is able to locate a sound in a space, assign different sounds to a building or a bench, or a public art work, adding a layer of digital experience to the physical surroundings.

Our first installation was located in the atrium at HP Research Labs. "The Woods - a Year and a Day" by artist Liz Milner and musician Armin Elsaesser, is an audio augmented exhibition using pools of audio linked to large photographic images (http://ginger.hpl.hp.com/hosted/mbristol/tliz.htm) This first piece of work allowed us to test some of our concepts and develop software to be used when the research testing moved outdoors into public open space.

The three initial projects to be located in the city also use the atrium space at HP Research labs to allow the artists/producers to develop some of their ideas, and to allow for reflection by the software/hardware designers as to how best to develop the interactive tools and the system infrastructure.

Project One: Millennium Square

Millennium Square is the location of one of our first outdoor projects, created in collaboration with artist Annie Lovejoy and composer/musician Roger Mills (www.herenorthere.org/msquare). There are two parts to this project, the soundscape, and the artist-designed wearable.

Millennium Square is a public space (45 x 55 metres) in the heart of Bristol's Harbourside, located outside Explore@Bristol, a hands-on science centre. In recent years the Harbourside has been redeveloped as a residential and leisure space. Millennium Square features a number of pieces of public art, such as water sculptures, a light installation (the Zenith), and statues of city notables such as Thomas Chatterton and Cary Grant.

The Millennium Square soundscape adds a layer of digital experience to the physical attributes of the square. This experience is only audible to the wearable user; the square seems silent to anyone else. The soundscape is located broadly in three areas of Millenium Square;

The Imaginarium is a huge mirror-tiled ball, part of the exterior of Explore@Bristol. There are a mixture of audio samples here that reflect the multi-culturalism and diversity of the city. These range from interviews and conversations to city sounds and music.

Around the water features there are sounds associated with water, such as children playing in the fountains, maritime histories, and sea shanties.

The light sculpture, Zenith, is located in the centre of the square and appears as 52 small lights embedded in the ground as an analemma. This figure of eight is used to represent the on-going collaboration between the artists from herenorthere and singers from Bristol's twin towns of Tbilisi and Hannover, by locating different pieces of music and voice around it. The wearable user mixes the tracks by the way they choose to walk around the analemma. Each user's path will be different, and the intention is that they collect a cd of the audio trail that they have created.

Mobile Bristol is providing hardware, software, technical support and access to the 802.11 network for the artists.

Project Two: Bristol Slave Trade Trail

This project is inspired by the Bristol Slave Trade Trail that was written by Madge Dresser, Coletta Jordan and Doreen Taylor to coincide with an exhibition at Bristol City Museum and Art Gallery. Available as a booklet, the trail takes the reader on a walk around the city, past buildings that have a relevance to Bristol's historical association with slavery. The

soundscape version of the trail will include a multi-layered set of narratives located around these relevant places that allow different historical voices to be heard as well as modern responses to the historical facts. Elements of the original gallery exhibition are being transferred to a website by Bristol City Council, and some of this digitised material will be available to the soundscape user. The Mobile Bristol project also plans to work with a local drama group and a youth film project to produce short video clips to be streamed to the wearable user.

We are interested in finding ways of furthering participation by allowing people to add to and augment the trail with their responses as they follow the pre-written histories. Interested parties working on the historical content include local historians, academics, artists, community workers and city council officers.

Project Three: A New Sense of Place

Much literature today focuses on the lack of opportunities for children to play safely without parental control and intervention. Young people become constrained to play only in spaces that are perceived as safe by the adults around them, and it is harder for them to develop a sense of the place that they live in if they can not explore their environment further as they grow up. We took this as our starting point; to explore whether young people would be allowed more free access to their local environment if we could use wearable devices to overcome parental concerns about child safety and mobility, and whether young people themselves would find the technology fun, interesting or useful.

The multi-disciplinary group includes researchers from HP labs Bristol, the University of the West of England (Community Information Systems Centre), Bristol University (Computer Science, Geography), and Futurelab (http://www.nestafuturelab.org/). We are using the common ground of the project to investigate a variety of concerns:

- the impact of wearable devices on young people's play, learning and interaction with their outdoor environment.
- the way that young people's personal 'maps' of their environment change depending on their age and gender, and if it possible to help them expand the areas they are allowed access to in order to create a new sense of place.
- working with young people as creative collaborators in the development of the project, rather than as end users of a product.
- how young people would like to use the wearable technology available now to augment their own environments, and what they would like to see as future developments.
- how can this technology be used to create a compelling experience.
- developing software so that the young people can use the technology to be as creative as possible with as little interference from adults as possible.

Workshop sessions have been run with two different groups of school students aged 11-12 building their own soundscapes, where they were able to record voice and music, and use pre-recorded music to augment a space. They created a variety of soundscapes, some music-based, others contained information or instructional elements, while some were based on games such as a treasure hunt. We conducted a brainstorm with the school students to elicit their ideas about the future impact and potential of the technology. Our next plan is to take the technology into outdoor space such as school grounds, a park or a playspace, and enable young people there to create personal soundscapes.

Future Plans

Mobile Bristol aims to develop a secure and robust technical infrastructure that covers as much of the city as possible. In its first phase it is restricting the network to several key locations before it is rolled out across the city at a later date.

The projects described in this paper are using initial locations, such as Harbourside and Millennium Square, to test out the concepts as well as the technology. One of the aims of Mobile Bristol is to make the technology we are using as accessible and appealing as possible to a wide variety of users, so that they can use the systems without high levels of technical support. The workshops and collaborations with artists and content producers push the development of the software to be used for soundscape creation. At the same time there are researchers working on the technical infrastructure for Mobile Bristol, so that once it is both secure and robust enough, we will be able to allow greater levels of involvement to other interested parties who have ideas for collaborative, context-based interactive pieces of work.

We held a successful one day conference in Bristol at the beginning of 2002 which articulated the scope and potential of the technology to an invited audience, and where we showcased "The Woods - a Year and a Day" (http://ginger.hpl.hp.com/hosted/mbristol/). The conference generated expressions of interest, identifying future collaborative partners with a broad range of interests and backgrounds.

Mobile Bristol is continuing to develop the original three projects at the same time as identifying new projects that push different strands of the research. There are crossovers and links between the different projects, for example on the development of the application tools. Also, we are developing links with industrial and fashion designers who are interested in the 'packaging' of the devices and how to integrate the components into clothing.

Narrative Hand: Applying a fast finger-tracking system for media art

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Abstract

This paper describes the development of a vision-based finger tracking system for media art; the system utilizes an infrared camera and a Kalman filter to accomplish this finger recognition image processing technology. The system is stable and fast, and is able to recognize not only gestures but also the speeds of gestures. Our work, called the "Narrative Hand", switches movies to show the speed at which users close their hands. Our system was exhibited for six days at ACM SIGGRAPH2001 Emergent Technologies, and many visitors experienced it.

1. Introduction

We have developed an augmented desk interface system called the EnhancedDesk which allows users to interact with both physical objects and digital information projected onto a desk simultaneously based on direct manipulation with their bare hands [1][2]. EnhancedDesk is equipped with an infrared camera, a color video camera, and two LCD projectors. Real-time tracking of a user's hands and fingertips is an essential part of EnhancedDesk; a user can simultaneously manipulate both physical objects and electrically projected objects on a desk by using natural hand gestures. An infrared camera is used for reliable detection of the user's hands even when various kinds of information are displayed on the tabletop. Once image regions corresponding to the user's hands are identified, fingertip positions are determined by using several image processing procedures, including morphological operations and template matching [3]. During the past summer, EnhancedDesk was selected as one of the exhibits at Emerging Technologies of SIGGRAPH2001, and more than 2000 visitors tried our system during a period of six days. We developed four demonstration applications; Narrative Hand, introduced in this paper, is one of them. We developed our demonstrations so that they emphasized the following aspects of our system: intuitive interaction based on direct manipulation, symbolic gestures with users' own hands, accuracy and reliability of our vision-based technique for tracking multiple hands and fingertips in an uncontrolled environment. In particular, we produced Narrative Hand with keeping in mind that our finger-tracking system was very fast.

2. Narrative Hand

In NarrativeHand, we see various kinds of objects such as a tomato or a piece of tofu. These objects are squeezed or smashed by a hand projected on a desk depending on how fast users close their own hands. For example, objects are squeezed gently when users close their hands slowly. In contrast, when they close them quickly, objects are smashed violently (Figure 1). Although the displayed hand is not a user's own hand, the user somehow feels a strange identification with the virtual hand. In our work, the shown objects are a tomato, a kiwi, an egg, an orange, a paprika, a piece of tofu, spaghetti, tagliatelle, blueberry jam, a cup of yogurt and a tube of mayonnaise. Our concept text is as follows.

> *Quietly watching the object in your virtual hand, you crushed it. You might have some such experiences in your life. You can damage the existence of the object by tearing off, twisting, beating or smashing. If you select a different action (the verb), your "intention" will be different for the same object (the noun). When an "adverb" that describes the action is different, what will be different in your mind? "She gently crushed the tomato in her hand." "She violently crushed the tomato in her hand". What will exist in the time when her fingers touched the tomato peel and in the space where the pulp of the tomato splashed?*

Figure 1. Examples of shown movies

Figure 2 shows the system architecture of our work. It consists of a finger-tracking system, a server program and a client program that shows movies. The finger-tracking system sends the recognized result to the server program as an event, and the server program forwards the event to the client program. The client program developed with Macromedia Director selects the movie to show according to the recognized result.

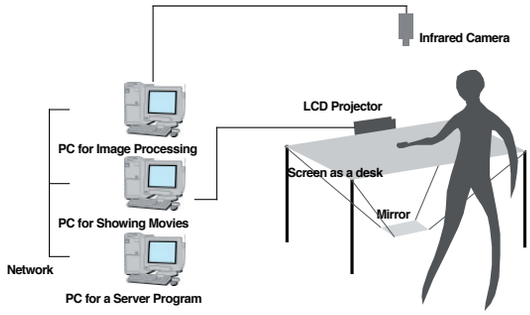

Figure 2. System architecture

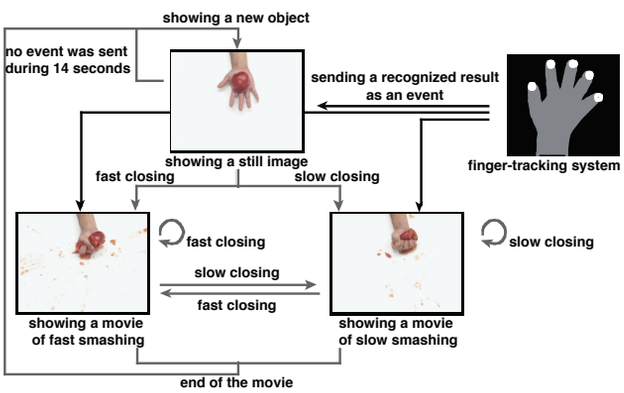

Figure 3. System flow

Figure 3 shows the flow of our work. Our vision-based finger-tracking technique is used for determining the speed of the closing of a hand. At the same time that a user's hand closes, a trigger signal and the speed of closing of the hand is sent to a PC, where movies of crashing objects are projected. When the replaying of a movie is finished, the system selects a new object to show at random, and the still image of that object is shown. Because the client program changes the frame number of a movie to replay when a finger recognition system sends a recognized result, it begins to replay a movie according to the speed of the user's hand closing in the midst of the replaying of that movie. Therefore, users are also able to smash the same object again and again at different speeds.

3. Finger Tracking

With using a infrared camera, image regions which correspond to human skin can be easily identified by binarization of the input image with a proper threshold value. Then, for the purpose of fast search of multiple fingertips, a search window of a fixed size is set so that it includes a hand part of the arm region based on the orientation of the arm. Once a search window has been determined for a hand region, fingertips are searched for within that window. The overall shape of a human finger can be approximated by a cylinder with a hemispherical cap. Thus, we use normalized correlation with a template of a circle with the proper size for detecting fingertips, and the locations of fingertips are detected. Then, our finger tracking system measures trajectories of multiple fingertips by taking correspondences of fingertips detected in each image frame between successive image frames with utilizing Karman filter [3] (Figure 4). Our finger-tracking system is fast (30frames/sec), and we can recognize not only gestures of hands but also speeds that gestures were done. In this work, we utilized the transition time that the number of recognized fingertips changed from five to zero as the speed of closing a hand. When that time is longer than the defined threshold value, the system recognized that a user closed his/her hand slowly. Otherwise, it recognized that he/she closed his/her hand fast.

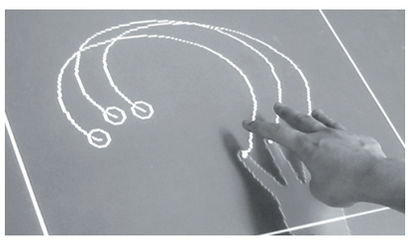

Figure4. Tracking locations and trajectories of fingertips

4. Conclusion

Many visitors experienced our work in SIGGRAPH2001. Some people enjoyed smashing various objects, and others enjoyed smashing the same objects at different speeds again and again. Many previous works have utilized image-processing techniques; however, their speed was not very fast. The visitors who tried our system of our work would have taken in the possibility of the human-computer interaction realized by fast image processing. Our work was selected as one of nominated works at 5th media arts festival held by the Agency for Cultural Affairs of Japan, and the movie of our work was exhibited at the Tokyo Metropolitan Museum of Photography in February 2002.

Reference

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Programming Literacy for Artists

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Abstract

If you, the artist, speak computer, you can control your data. That's all that computer languages do – manipulate data: words, pictures, sounds and other programs. Many artists can see the advantages of computer worlds with complex emerging behavior but can't find the way in. The way in is with high-level languages used with an immediate relevance to the realization of an artistic idea. Literacy for electronic artists is fluency in programming languages and their digital interconnections. This paper proposes a methodology for the electronic artist wishing to come up to speed.

1. Programming Interactivity in Art

"With the advent of new computer technologies new dimensions were introduced to the artistic creation process: virtual space and real-time interaction." [1]

New media art is interactive – that's what makes it new. Interactivity is not new in itself. People see a different movie even when we sit side-by-side, different images in our heads when we read the same book, different strategies when we play a game. This kind of interactivity is the imagination space the viewer/reader/player constructs within the story, but this is a limited kind of interactivity. Deeper interactivity in basic human actions like drawing, conversing, playing music, calculating, stems from the human need for self-expression.[2]

Enter the digital age, where the computer can input all sorts of data from sensors, it can output all sorts of media, it and it can process the inter-relationship between them in fast, clever ways – as clever as we can make them. But are we clever with new media art? Not as clever as we could be. The majority of interactive installation art today is dominated by first-order interconnections between input and output. It most often consists of sensors triggering pre-captured media according to the artists' plan - *reactive* art.[2] The intent, meaning or comment of the artwork can still be strong in these 'first order' artworks, however, they don't harness the capabilities of the computer – the ability to engage in real-time processing.

The most interesting commercial software for digital media incorporates built-in scripting languages, which extend the possibilities inherent in the software to real-time interaction with input devices. Scripting languages are a good place for artists to start extending their skill sets. Artists learn the power of variables, consider the control structures ruling the computer, cope with the exacting nature of writing in code and appreciate the processing power of the machine in front of them to produce 'reactive' media artworks.

Scripting is a good place to start – but it is not real programming. When the artist finds something that the software just can't do – then they are ready to make the leap into code.

2. Making the Leap

The easiest way for artists to use programming is to make friends with a programmer. Artworks that push the boundaries typically come from collaborations with computer scientists and these works are often closely linked to research labs using complex proprietary software. It is a rare and wonderful breed of computer scientist who embraces art. However, making the leap from artist to programmer is perhaps even harder, due to complex personal, societal, perhaps even neurological issues.

So is there is a magic line between those who can program and those who cannot? Programming is not a natural-born skill. Learning a computer language is similar to learning a foreign language – you can speak just enough to get around, or you can attain the level of native speaker. The point is that even enough language to 'get by' is invaluable from the perspective of wider communication. The more you understand how the computer thinks by trying to talk to it (through code), the more you can understand its capabilities and its deficiencies. Fluency is, of course, entirely separate from having something worth saying.

3. Working Against The Fear Factor

"The kind of mathematics *foisted on children in schools is not meaningful, fun or even useful."* [3]

Societies, over the past century have arbitrary divided art and science. The artistic personality is sensitive, given to abstraction and good at visualizing ideas. The mathematical/scientific mind (in contrast) is logical, particular and adept at numerical calculation. Teachers are 'trained' to recognize these 'types' by secondary or even primary education level. Universities, carrying on this tradition, are divided into Humanities and Sciences.

Art has always borrowed from science, whether it is through the painter's technique of perspective, or more modern digital borrowing. In the last decade there has been an about-face by many in the artistic community. As late as 1995 there were artists proclaiming proudly that they didn't have an e-mail address or own a computer. These voices have all but vanished.

Although more people are familiar with software, few people really understand what is going on beneath the surface. People often don't realize that the GUI is an interface, 'windows' are an invention and 'cutting and pasting' is a learned technique. A generation has been born who never knew life before the Internet.

4. A Teaching/Learning Methodology

The standard approaches to learning computer languages may have to be different for the artist. Most books selling the premise of learning a language in 20 minutes are either so basic that they never get to the good stuff, or so jargon-filled that they are inaccessible to the non-technical mind. But which language to choose? The short answer is any one will do, as they are all essentially the same. The longer answer is to choose a language

that is suitable for your goals. If you are a web developer it makes sense to choose Java, if you want to extend your computer animation skills you could choose Perl or even C. Most commercial software is written in C or C++, but that doesn't mean that these languages are appropriate for art. I teach the object-oriented language Python because it's cross-platform, high-level, the available documentation is fun and it's free.

4.1 Low Level Languages

There is a hierarchy of programming languages when you speak to a computer. At the very lowest level, the bits and bytes, transistor level, the machine only understands bursts of electricity. Built above this is a layer of 'machine language' that consists of a long stream of simple instructions like start and stop and jump and includes pointers to addresses in the memory. It is long and boring to read. At the middle level are the more complicated languages such as BASIC or C. These languages have libraries of common functions that do things like read or write files and have to be translated down into machine language for the computer. The code is easier to read than machine language, but they're harder to learn than the latest high-level languages, because the higher you go up the hierarchy the closer the commands are to natural English language.

4.2 High Level Languages

The most popular of the higher-level languages are object-oriented languages like C++, Perl, Java and Python. Lower-level languages like C have to be completely compiled into a machine-level translation before they are run. These languages are typically translated on the fly. This means that you can interact with just little bits of code to test your ideas. For example, you can say x is 3 and y is 5 and then ask what x + y equals. It will give you the answer back immediately – which is very good for quickly debugging code.

The 'object-oriented' name refers to a control-structure idea. Object-oriented programs are written as a set of inter-related mini-programs, a modularity where you can use the same program in different ways through their interconnection. Object-oriented programs allow interesting behavior to arise because the modularity of its construction allows you to think on a higher level without having to worry about the serial order of commands. It is not necessary to learn this level of the language when you start out, but their more advanced structure allows you to reuse and rearrange pieces of your code in completely new ways later.

5. Starting Out

"*… an algorithm is a fail-safe procedure, guaranteed to achieve a specific goal.*" [4]

It is essential to have a creative goal in mind when you start to program. One important point is to have something fun to work on – otherwise it be a chore to learn. Don't be too ambitious and don't give up when it doesn't work the first time, or the second, or the hundredth time.

The process of debugging your programs is the most beneficial of the programming experience. Computer problem-solving skills can often be adapted to obstacles outside the programming environment. However, writing a program is not like writing an essay. It is usually not possible to stay up all night and have something, anything, resembling a finished work. The way to attack a programming problem is to break it down into pieces, simplifying it, being systematic, and approaching it from different angles.[5] This means starting and stopping frequently, taking breaks and walking away to come back refreshed. This is another practice that can be beneficial outside the programming environment.

6. Down to Specifics

Variables. Control Structures. Data Structures. Algorithms. Understand and use these four elements and you are a programmer. These four areas of programming will be met immediately and simultaneously when you start programming – division between them is artificial.

6.1 Variables

Variables are the place to start and they are very powerful ideas. If you can remember back to high school algebra and x+y=3, you have already used variables. However, they are used in a different way with computers – as placeholders. They can hold numbers, series of numbers, commands, words – even other variables. The important thing to remember is that they have a function.

Variables should be named according to their function, things like "counter" or "table" or "keepRemainder".[6] When I first started to program I called my variables things like "John" and "Sarah". But guard against using any of the special words the language reserves for commands. Try to keep the names short and if they recur frequently use just a letter like "i" for "counter".

Counters are particularly useful ways to use variables. Consider the common line of code $i = i + 1$. To an artistic type this line is incomprehensible. How can i equal anything other than i? We can understand $i = 3$, but $i = i + 1$? This not designed to confuse, as it is not an equality statement, but a right-to-left assignment. It is often the last line inside a loop opening up possibilities for recursion, leading to cool things like fractals.

6.2 Control Structures

Loops are one of a number of control structures. Historically (and controversially) attributed to Charles Babbage's colleague Ada Lovelace, the loop is a fantastic idea for using the remarkable processing power of the computer. Computers are very good at repetitive procedures and loops are an essential technique. It is a very simple one and would count as the first of many control structures to learn. Control structures range from low-level loops to high-level object-oriented coordination.

Take a look at your creative goal and use a flow chart to plot how the data will be manipulated. Break it down into pseudo-code so that each section is described in English, but in the way a computer would think about the data flow. Finally break it down into real code, testing each little bit as you go.

6.3 Data Structures

Data can be in variables, or it can be in a list, or a dictionary where one value equals another, or in an array or matrix where data can be accessed in a method like Cartesian coordinates. Data can also be written out to a file. All of these methods of storage and retrieval have to be practiced in order to achieve proficiency with programming.

6.4 Algorithms

Algorithms are the business end of programming. Algorithms are mathematical methods for sorting, searching, processing and filtering – essentially they are proven techniques for working out a problem. An example would be an algorithm for a pseudo-random number generator, a very handy program. Algorithms for AI and neural networks are at the cutting edge of technology and they are often beautiful and inspiring in their simplicity.

7. Getting there from here.

Whichever programming language you choose, you may struggle initially with the syntax as you try to bend your idea into 'computer-speak'. The syntax is unforgiving, which makes it both harder and easier to learn than natural languages – harder in that if you misspell even one word your program will not work; easier in that there is no grey area with computer languages, the computer will only do what you want it to do.

There are lots of advantages to learning programming. It helps you even in everyday speech say exactly what you mean – and in the right order (as in giving directions). If you work with programmers in the future (and good friends they are), you can understand where they are coming from. The biggest advantage of learning programming is that it offers new opportunities for making art. It broadens problem-solving skills and opens your eyes to the real capabilities of the ubiquitous imagination machine.

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Web3D Dance Composer: A Web-based Ballet Performance Simulation System

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Abstract

This research approach focuses on sharing 3D animation data over the Web and creating a system capable of animating virtual ballet performances. Sharing motion data on the Internet allows anyone to access various artistic dances all over the world. In addition to this, these motion data can be applied in online systems for educational and artistic purposes. I present Web3D Dance Composer, which enables the creation and editing of classical ballet animation based on VRML. This system allows anyone to easily create and simulate artistic ballet performances as well as realistic stage effects. Since it is important for classical ballet to provide an artistic harmony from both dance choreography and stage&scenario effects, this system can be useful for teachers and choreographers to simulate their performance in advance. This system also allows artists opportunities and possibilities to express their feelings.

1. Introduction

Although many researches on dance using 3-dimensional (3D) human animation through motion capture systems have been recently developed, little attention has been given to share and use those motion data on the Internet. My research focuses on sharing 3D animation data over the Web and creating a system capable of animating virtual ballet performances.

For many years, various animations have been composed by using applications for choreography [1][2]. Such applications, though widely used until now, do not work on the Web and they are not suitable for online applications. Sharing motion data on the Internet allows anyone to access various artistic dances all over the world. In addition to this, these motion data can be applied in online systems for educational and artistic purposes. For example, one can prepare 3D movement catalog, compose pieces by collaborating via the Net, and exhibit pieces on an electronic dance museum.

My goal is to develop and integrate several modules into a system capable of animating realistic virtual ballet performances on the Web. I present Web3D Dance Composer, which enables the creation and editing of classical ballet animation based on Virtual Reality Modeling Language (VRML) [3]. This system allows anyone to easily create and simulate artistic ballet performances as well as realistic stage effects. Since it is important for classical ballet to provide an artistic harmony from both dance choreography and stage&scenario effects, this system can be useful for teachers and choreographers to simulate their performance in advance. Moreover, this system also has other possibilities regarding ballet dance performances. For example, users can change human characters to animals such as dogs and cats, or they can appreciate the performance from any imaginary seat such as a moving seat and a dancer's viewpoint. This system also allows artists opportunities and possibilities to express their feelings.

This paper describes a research framework to develop the ballet performance simulation system and shows a dance performance example actually generated by it.

2. Sharing and reusing motion data on the Web

I developed a simulation system that can easily create ballet performances on the Web. In this work I focus on a number of issues related to sharing and reusing motion data. As there are a lot of steps to choreograph classical ballet, it is difficult to collect all steps. The concept underlying my system foresees an increasing accumulation of these data, and their distributed storage over the network for sharing and reusing by users.

The main issue to share and reuse dance motion data over the Net is describing human motion. For this purpose, I adapted H-Anim [4], a standard way of representing humanoids in VRML, to a human model of a female ballet dancer [5].

I further segmented some motion sequences as basic ballet steps. Such independent motion data sequences make it easy to access and recompose actions easily as well as reuse the same data. I also handle characters and motion data independently. This allows us easily to change costumes or characters as well as to change motions. This allows character designers to simulate these ballet animations with their own characters.

Figure 1 shows an image of the sharing and reusing motion data by using this system. Basic steps and solo dances are increasingly captured and made available on the Net. Users may use such data to create their composed steps. Teachers and choreographers can save their own choreography. On the other hand, students and the other users can see and use new arrangements of created archives.

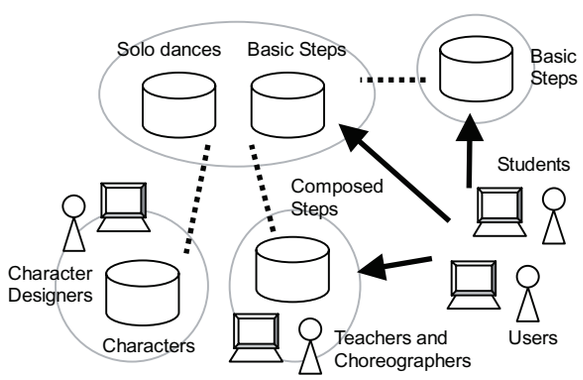

Figure 1: Sharing and reusing motion data

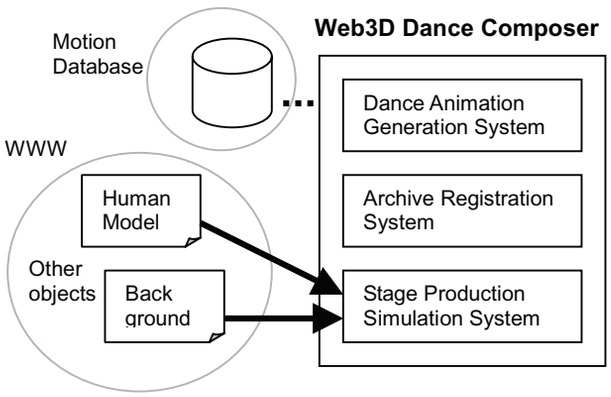

Figure 2: System architecture of WDC

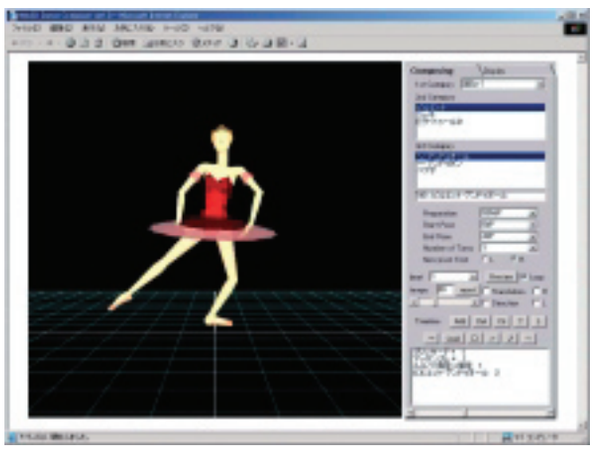

Figure 3: User interface of WDC

3. Web3D Dance Composer (WDC)

3.1 System overview

Web3D Dance Composer (WDC) is a Web-based ballet performance simulation system. Using motion capture data, one can easily compose and simulate various ballet performances. This system consists of 3 subsystems: a dance animation generation system, an archive registration system, and a stage production simulation system.

The dance animation generation system interactively creates a series of arrangements of a dance from basic ballet steps previously captured from professional dancers. The archive registration system registers the dance sequences that may be new arrangement of dance archives created by the dance animation generation system. Using these registered animations, the stage production simulation system creates a dance performance according to a scenario. Users can interactively simulate various stage effects such as costumes and background.

As a result from the use of the three subsystems described above, users can finally create classical ballet performances on the Web.

Figure 4: Recording motion data by a professional dancer

	Number	Examples
Basic Steps (including Arrangement)	160 (300)	Assemblé, Glissade etc. (Assemblé Ouvert etc.)
Solo Dances	15	Cupid Variation etc.

Table 1: The number of motion data and examples

3.2 System architecture and user interface

Figure 2 indicates the system architecture of WDC. This system consists of 3 subsystems and motion database. The motion data of basic steps should be prepared on the motion database. The other object files such as characters for the human model and background object data can be stored on the Web and users can add more files.

Figure 3 shows the user interface of WDC. It employs only one window, which consists of a virtual environment based on VRML and a Java Applet including menus for each subsystem. All the requirements to run this system are a WWW browser and a VRML Plug-in. This system works on general Windows PCs.

3.3 Motion database

Each dance has its own style and composing process. Especially in the case of classical ballet, there are typical steps and methods that have to be considered. Thus, in order to compose a virtual choreography, my research group proposed a method for segmenting motion data and describing classical ballet steps on the computer [6]. In addition to this, we constructed a motion database of basic steps, which were performed by professional ballet dancers. We have about 160 basic steps and some arrangement steps for each basic step. We also have some solo dances for classical ballet. For capturing motion data, we used both an optical motion capture system and a magnetic system for 5 dancers because it is difficult to use the same systems and dancers to gather all steps. Figure 4 shows a recording scene using the magnetic system. Table 1 shows the number of steps and some examples of our motion database.

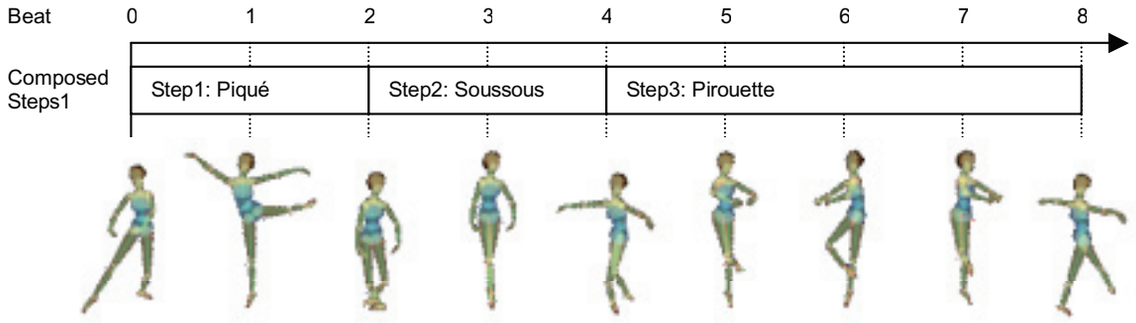

Figure 5: An Example of composed steps

4. Functions of each subsystem

4.1 Dance animation generation system

Since classical ballet is a dance that typically consists of established steps, one can compose ballet choreography by connecting basic steps. I constructed a dance animation generation system by using these steps [7]. This system easily allows dancers and teachers to generate the arrangement of a dance.

The dance animation generation system roughly consists of 3 parts: Step List, Time Line and Control Panel. All names of steps are listed in Step List. Composed steps are shown in the Time Line. In the Control Panel, there are some buttons for the following functions:

(1) Previewing: The user can preview each step at any time before he/she adds it to the timeline.

(2) Speed Control: The system supports to change beat for each step because choreograph is usually depend on the beat like music. It also supports to change tempo to play.

(3) Editing: The system supports to add and delete steps to edit the list of steps. It also supports to change the turn of steps.

At the beginning, there is a character on the 3D world and there is no animation. To make choreography, the user provides a sequence of steps in Time Line by selecting steps from the Step List. Each step has some options such as left/right and beat. After making a list of steps, one can load the corresponding animation to the character. Once the user loads the animation, he/she can play it anytime. Figure 5 shows an example of composed steps. To connect some steps, each action can be translated and interpolated.

4.2 Archive registration system

The archive registration system is used for registering the dance sequences that may be new arrangement of dance archives created by the dance animation generation system. In the present system, 10 of composed steps that have choreographed by a ballet teacher for beginner's lesson are already registered. The user can use these composed steps as well as he/she can appreciate those. This system also registers previously captured solo dances in classical ballet and characters for the human model that based on VRML H-Anim.

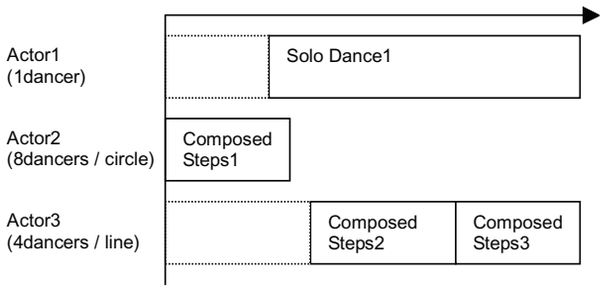

Figure 6: An example of scenario

Figure 7: Characters for the human model

4.3 Stage production simulation system

Using registered animations, the stage production simulation system creates a dance performance according to a scenario. Figure 6 shows an example of scenario for a dance performance. The user can post the composed steps or solo dances to the timeline for each actor. He/she can simulate different animations for multi-humans. In order to represent an attractive ballet stage, I prepare the display control system that has the following functions:

(1) Character: The user can change the character for the human model, some of which are predefined as shown in Figure 7. These characters, as well as any other character on the Web, can be easily changed in accordance with users interests.

(2) Background: Since the system supports VRML files in which some objects are defined, users can freely adapt the stage characteristics as they like.

(3) Formation: One can copy the figure of the dancer with the same choreography to simulate more than one of dancers dancing together. In addition to this, it is also possible to change the formation of dancers.

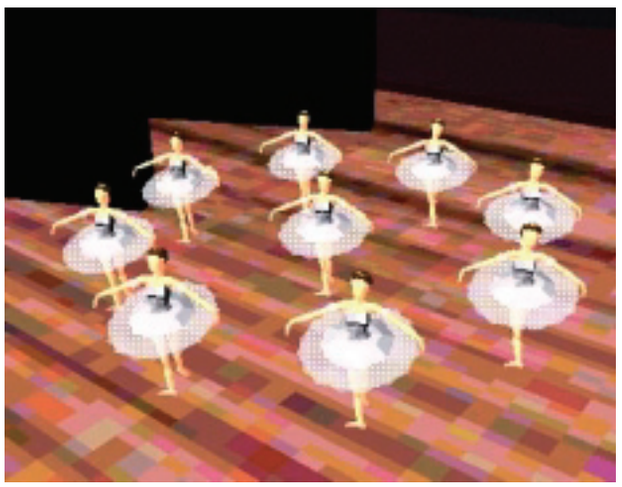

Figure 8: Dance Performance Example 1

Figure 9: Dance Performance Example 2

5. Dance performance examples

Figure 8 and Figure 9 show the screen shots of dance performance examples actually generated by WDC. In the case of Figure 8, all dancers perform the same composed steps on a virtual stage. 8 dancers are arranged in a circle around a dancer. Figure 9 is a little complicated case. 9 dancers perform 3 kinds of composed steps, and the background location is a recreation of “Sakae,” the downtown area in Nagoya City.

6. Conclusion and future works

I presented a Web-based ballet performance simulation system combining a dance animation generation system, an archive registration system, and a stage production simulation system. My proposed system is capable of not only composing choreography, but also simulating scenarios and several stage productions. I verified that this system could successfully simulate some dance performance examples. In addition to this, I could effectively share and reuse motion data on the Web. This allows anyone great opportunities and possibilities to use precious motion data.

In the future work I intend to augment the composing system by supporting functions such as the body part manipulation. I will develop an automatic choreography system for actual ballet lessons.

Acknowledgement

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Work in progress and current documents may be found at http://pinakes.soc.toyo.ac.jp/BIN/webdance/ . This Web site also contains the proposed system, Web3D Dance Composer.

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L'ESTHETIQUE NUMERIQUE, UNE LECTURE AFRICAINE

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Résumé : Poser la problématique du regard africain sur l'esthétique numérique, c'est indiquer la place et le rôle des artistes et critiques d'Afrique dans l'usage de nouveaux supports et de nouveaux outils dans l'univers de l'art. La présente communication se veut un témoignage mais aussi un appel pour que l'étape actuelle de l'art se conjugue à l'humain, c'es-à-dire rapproche tous les hommes à partir d'une maîtrise du numérique.

INTRODUCTION

Pour le continent noir, l'avenir se conjugue avec la maîtrise et l'appropriation de tous les outils scientifiques. Ce qui autorise à prophétiser que le 21ème siècle sera africain ou ne sera ! Non pas pour lancer une boutade facile, mais pour faire un constat qu'on peut relever en examinant attentivement les marques esthétiques dans lesquelles se définit l'Africain.

Esthétiques ? Parce que, parmi les choses qui forgent une civilisation et permettent d'identifier les particularismes des hommes et des femmes qui véhiculent une telle civilisation dans leur être, il y a principalement la production artistique et le discours esthétique. Deux axes de réflexion pour le dire : le premier indiquerait en quoi de toutes les esthétiques classiques, l'esthétique plasticienne reste celle de tous les temps, le second développerait la relation de complémentarité ou de mutuelle fécondation entre la plasticité, le numérique et le devenir de l'Afrique dans le monde.

I- DES ESTHETIQUES CLASSIQUES ET DE LA PLASTICITE

Dans chaque discours en Occident, il y a la référence à l'art exprimé naturellement ou créé par le génie humain. L'esthétique classique pouvant alors être définie comme la réflexion philosophique sur la nature du beau qu'il provienne de la nature ou des mains et de l'esprit de l'homme.

En Afrique par contre, l'esthétique est plasticienne et ne repose pas sur un dogme d'un beau unique. Elle appelle lire les beautés où qu'elles se trouvent et quelles que soient les formes et les contenus qu'elles expriment. Cette plasticité est danse et musique, architecture et économie, médecine, science, philosophie, verbe, signe. Elle est tout ce qui contribue à bâtir la personnalité de l'homme, tout ce qui le rend apte à répondre comme il se doit, aux interpellations de la vie. Elle est donc fondamentalement liée à *l'être* des peuples noirs et dit leur intimité.

Or, qui dit intimité, parle de l'homme dans ses profondeurs tel que l'Afrique l'a toujours exprimé dans ses arts et dans ses modes de fixation de la mémoire de ses fils et de leurs temps. Est-ce alors exagéré de dire que si l'Afrique actuelle choisit de « faire avec » le numérique, c'est parce qu'elle n'a pas en face d'elle deux termes d'une alternative ? Peut-elle faire autrement que de conjuguer son devenir artistique et son Devenir avec une domestication des produits de la recherche scientifique ? L'Afrique n'est-elle pas dans son domaine lorsqu'on parle d'art, qu'importe l'outil et le support en question ?

II- DE LA LECTURE DU NUMERIQUE AU DEVENIR DE L'AFRIQUE

Assurément, l'Afrique vit sa part dans la révolution numérique. Ses artistes et ses esthéticiens se sentent concernés non pas pour faire mode, mais pour dire leurs intimités et leurs pensées d'hommes de leur temps.

Il suffit de parler de la dernière Biennale de l'art africain contemporain de Dakar Dak'Art pour montrer en quoi le numérique devient non seulement une préoccupation des officiels, mais une passion chez des artistes et chez des critiques. En effet, les plus grandes innovations de la Biennale Dak'Art 2002, ont été le Forum des arts numériques et les œuvres numériques présentées par certains artistes.

Mais, le défi de l'information et de la sensibilisation autour du numérique reste à mener, surtout pour éviter que la grande majorité des artistes africains ne voient

dans l'avènement du numérique qu'une nouvelle façon de domination que les Occidentaux veulent exercer sur les fils du continent noir.

Une telle perspective est à prendre très au sérieux pour qui sait qu'en Afrique toutes les questions majeures sont fondamentalement politiques. Est-ce à dire qu'il ne sert à rien de multiplier les « il faut », « l'Afrique doit » si les directions de solutions et d'actions n'intègrent pas la responsabilité des politiques culturelles des états africains ? Sans l'appui des états en Afrique, il y aura-t-il développement culturel et artistique avec le numérique ? Oui, certainement, si les artistes continuent de laisser les conditions de leur promotion entre les mains de leurs gouverneurs, préfets, présidents ou ministre. Oui, sûrement si les galeries privées en Afrique règlent leurs programmes au goût des princes du jour.

Non bien sûr si la critique sait s'impliquer dans la théorisation des enjeux de l'art contemporain fécondé par le numérique, et si elle s'engage à défendre en toutes circonstances la liberté de créer. Non effectivement si chaque artiste apprend son métier et sait se perfectionner et s'enrichir en essayant tous les supports et tous les outils que lui offrent son temps . Non encore si chaque artiste africain reste lui-même et refuse la création sur commande fréquente chez beaucoup de galeries occidentales.

C'est dire encore que la réflexion esthétique est cruciale dans cette époque de *scientisation* de l'art. Une réflexion qui est condamnée (si elle veut éclairer et convaincre), à une conceptualisation appropriée. Le danger à éviter cependant, est de remplacer par exemple les notions kantiennes de « beauté libre » et de « beauté adhérente » par beauté technologique et beauté numérique.

CONCLUSION

L'Afrique à son avenir devant elle dans la production artistique et dans la réflexion esthétique autour du numérique, si elle reste elle-même c'est-à-dire fière de ses valeurs de plasticité et domptant à sa guise tout progrès de l'humanité.

La lecture faite ici par un Africain sur l'évolution du numérique dans l'esthétique, est un appel pour motiver les enfants d'Afrique et ceux de tous les autres coins du monde pour qu'ils participent par la production et la diffusion artistique à la formation d'un autre monde plus solidaire parce que plus humain.

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Look at Helen Keller: New Aesthetic Possibilities from Assistive Technologies for the Blind and Deaf in the Post-Lingual Age

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I originally gave this paper a year ago in Los Angeles for a panel on the topic of a "post-lingual" society. For me, the phrase "post-lingua" is an intriguing one. It plays with the idea that human communication and culture has progressed linearly from a primitive use of voice, through the age of literacy, into our current technological and graphical age. This is an age in which the *word* --in the form of speech act and text --is stripped of its referent and serves as fodder for the image in print, film, and electronic media. The "post-lingual" age is an age in which gatekeepers of proper culture and communication rail against youngsters' inabilities to read or speak correctly --replaced, so it seems, with sophisticated appetites for mashed-up TV and music and superpowers reserved for Playstation 2. The fear is that we're setting up our species for an evolutionary turn by which our tongues will disappear from lack of use --marking our time as "after the tongue."

But it's clear the progression from orality to literacy didn't kill off our abilities to speak. Even now, after the electronic and graphical revolutions, voice --and the communications devices that make use of it --telephone, radio, television, and internet-- adapt themselves to what language historian Walter Ong has called a "secondary orality" [1] --or a way in which we use our voices that is forever determined by the presence of text. By using the phrase "post-lingua" as a lodestar, I'd like to show that text is currently undergoing similar adaptations as it finds ways of being useful and pleasing in our current culture, and that the most provocative examples come from assistive technologies for the blind and or deaf.

The reason why I made reference to Helen Keller in the title of this talk is that, although her story fascinates us for many reasons -- it's a tale of transformation of a wild child into a Victorian model of civility and a rumination on the exoticism and possibilities of plural disabilities --she also impresses of us with her developed talents for a range of communication technologies. She was a model hacker with the foreign codes of writing, reading, speaking, hearing, Braille and Sign Language. One can see a "hacker" aesthetic even in the artifacts of Keller's early letters, as each word bears a trace of the tools that were used to form it. But if one pulls focus away from these traces and concentrates on the meaning of her words, one sees evidence of a rare condition. One sees the work of a person who was literate before she was oral --that is, she knew how to write before she knew how to speak. I was hooked when I first read Keller's letters. As a graduate student working in new media, I struggled daily with lots of machines, booting and beating them up to help me make something I could call art. I felt that Keller's bouts with Braille, tablets and styluses, American Sign Language, lip reading, and vocalizing were an analog for my own struggles with email shell accounts, nonlinear editing systems, programming languages, samplers and synthesizers. Cultural theorist Donna Haraway has voiced a similar admiration

It's true that there now exists a cultural climate in which we admire those who come closest to the machine -- those who literally incorporate new technologies in the forms of (if not jealousy) for differently abled people whom she considers most successful at hybridization with communication devices --the real cyborgs of our society. [2]
prostheses, implants, or even a reworked genome. But also, as readers and makers of culture cut off from the means of production, we admire the work of those who touch their tools. As our hands disappear from the process of artmaking and reappear on our screens as blinking icons and cursors, we find pleasure in running our fingers over Braille, even if all we feel is noise. Maybe we feel pleasure because of it.

Braille and Sign Language fascinate because of their foreignness and potential for being served up as graphic elements, just as English-speaking artists sometimes use Japanese characters -- not in reference to a word's meaning --but as an interesting shape that signifies the exotic. We find a way to read the sign, even though it is obfuscated.

All artists, to some degree, are in the obfuscation business. Through the process of dragging and dropping an idea into material --watching as it melts and combines --we fret over the survival of its "essence" and wonder, "What would happen to this idea if it were translated into another medium, if it were touched by another tool?" This is perhaps, too, why sighted and hearing people attempt to translate pictures into sounds for the visually impaired and sounds into pictures for the deaf, because through this process we might understand what is immutable about an idea behind an image or a sound.

A provocative example of this kind of project is the voice sonification project developed for the web by programmer Peter Meijer. [3] Meijer's script translates black and white images into sound files by assigning a sound frequency to each pixel depending on its gradient. By listening to the looped sound, a blind person should, according to Meijer, be able to "see" the image of, say, a man's face. As the user changes the gradient of the pixels, the sound loop adjusts accordingly.

I'm pretty sure this technology is more interesting to people with good sight than to visually impaired users and I must admit that, on first encountering this website, I really loved it and was just thinking about how I might be able to use it in my own work. In fact, on first proposing this paper on the aesthetic possibilities of assistive technologies, I had in mind an exploration of tools like Miejer's--tools for translating sounds into pictures and pictures into sounds--skipping over, as it were, a obvious mediator. As it turns out, the assistive tools that offer up the most interesting aesthetic possibilities are far simpler since the exchange of images and sounds is most easily mediated by text.

The deaf community is one that has benefited from the electronic revolution. Email, chatlines, instant messaging, and listservs are useful developments for linking up a diaspora of wired and literate deaf people. In addition, closed-captioning has made TV a more inclusive medium by giving viewers a text version of lines spoken and even sung in a program. Each of these means of communication is a new use for text and, as is the

[1] Walter Ong, Orality and Literacy: The Technologizing of the Word, Routledge, New York, 1982.

[2] Donna Haraway, "A Cyborg Manifesto", Simians, Cyborgs, and Women, Routledge, New York, 1991

[3] http://www.seeingwithsound.com/javoice.htm

case with most adaptations made for people with a specific disability, they provide benefits for others as well. I don't know American Sign Language, but because of internet chatlines, I can communicate in real time with a deaf or hard of hearing person without the aid of an interpreter. Because of closed-captioning, I can practice reading and speaking Spanish.

In addition, watching television with closed-captioning helps me recognize, for instance, a Sunday night movie for what it is --a cultural production which intends to distract me, means for me to suspend my knowledge of its artifice. This is impossible if I can read the script *before* the actors speak the words. It also reveals that, at the core of a TV production, there almost always exists a written text, which steadfastly, though invisibly, reigns over the spectacle.

Although they're perhaps most discounted by the increasing dominance of image over voice and text, the visually impaired also benefit in the post-lingual age. The facility with which voices can be recorded, broadcast, and distributed -- and screen reading software that translates computer text into synthesized speech --all benefit blind communicators.

The latter has been crucial, in that it allows at least partial access to the Internet by visually impaired users. But the web, in all its graphic glory, holds little of interest for blind users unless sites are specifically designed to take them into account as part of their audience. Most web browsers allow for a user to "turn off" the images. If
a website is designed carefully --a textual description can serve as an alternative to the image. Sighted users can also choose to "turn off" the images because it saves loading time -- an act, which suggests many of the graphic elements on websites are not necessary for communicating information.

But, still, these images serve a purpose and one of the biggest challenges for mediamakers is in deciding how to translate the detritus the post-lingual age. Or more specifically, to decide what a .jpg or .gif file on a website *does* to a viewer and how one might use text to do the same thing to someone who can't see.

Ong points out that "word" aesthetics are really only utilities in disguise. For instance the poetics of Homer's *Odyssey* --its use of meter, assonance, alliteration and rhyming --can be seen as just tricks for memorizing a long poem. [4] Looking at a website designed specifically for visually impaired users reveals an aesthetic at work --it's a poetics which is also born out of necessity since these websites can only use text to convey information. To the graphically literate, its looks pretty plain, but I think we're coming into a period of the iconic age in which plain text can be seen as having its own graphic effect. Evidence of this is text-based aesthetic is found in the use of emoticons in email, in ASCII art, and on listservs in the fancifying of users' names with carefully inserted exclamation points, parentheses, and dashes --characters which ironically spring from text's inabilities to communicate emotion and cadence as effectively as the spoken word.

This text-based aesthetic is working its way into mass-produced culture as well. Wired Magazine bears less evidence of the "wired aesthetic" these days, perhaps persuaded by the fact that most of its readers were skipping over the printed issue of the magazine in favor of the on-line version that was always served up *sans* graphics.

TV and mainstream cinema are of course the two industries with the most invested in presenting a graphic visual spectacle and may be the last to bear evidence of a text-based aesthetic. But a new assistive technology called descriptive video service suggests a slight shift away from the spectacle towards text even in the movie theater. DVS is simply an additional soundtrack put on a film, which one can access by wearing headphones in the theater, or by selecting a track on a DVD. A voice on the additional track provides a description of everything that is communicated visually in the film. For me, what's most riveting about DVS is the verbal translation of the icons and logos of the film's production companies --products of the graphic age, never meant to be described textually, but now this description is its own media element. It's just like the character of Ghengis Kahn in Italio Calvino's *Invisible Cities* who slowly realizes he will only ever know his empire through Marco Polo's words, but learns to appreciate the descriptions of unknown cities as an experience just as real as travel.

Now that graphics are regularly translated into words, producers of media should soon take into account assistive technologies like closed-captioning, alternative descriptions on websites, and DVS --and consider them as sites for artistic work. Closed-captioning might, say, find a way to textually describe timing or tone of voice. Alternative descriptions of image files on websites might also be used to communicate more than a bare bones translation of a superfluous image. DVS might use different voices or tones to communicate information, or voices might take on the role of additional characters in the narrative, written specifically as part of the story at its inception.

In reading alternative descriptions for image files on the web and listening to DVS tracks, I keep thinking how much the style reminds me of Alain Robbe-Grillet's novels in which description of surface replaces a plumbing of psychological interiors and depths. His novels were described by theorist Roland Barthes as work that does not "explode or explore, nor is it obliged to charge upon the object and pluck from its very heart its substance. . . language is ... a progression of names over a surface, a patient unfolding that will gradually paint an object." [4] Barthes believes text works because it *is* superficial, but I think, in the post-lingual age, with all of its exploding and exploring, we'll continue to find text at the heart of things --and perhaps in the heart of the heart is a voice.

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4 Roland Barthes, Image, Music, Text, Hill and Wang, New York, 1977, p. 45.

[1] Walter Ong, Orality and Literacy: The Technologizing of the Word, Routledge Press, New York, 1982.
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A Theoretical Proposition For Interactive Telemedia Design

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Abstract

Media authors, performing as content providers as well as designers, have indicated that the artist of the electronic age has to become a programmer, an architect of systems, a composer of processes. Historical experiments with this metalinguistic, systemic expression have resulted in unheard forms of co-authorship and artistic collaboration. These works provide the basis for a theoretical proposition conceived to orient new media creative expression.

1. Media design as art language, the artist as meta-artist

Transformation of communication media have been requiring new strategies, new planning methodologies for creative expression and distant collaboration. In the process, a concept has emerged: scripting for interactive media.

Authors, writers, artists, besides providing new content, have also been performing as designers of media systems. While experiencing with, reinventing media languages, those pioneering artists have gradually abandoned traditional functions as individual creators. They can still produce aesthetic discourses but they are also redirecting their creativity, conceiving structures that contextualize discourses or systems that provide for other people's input.

Those (meta)-artists artists have been enlarging the creative spectrum, enunciating processual, conceptual or computational propositions pertaining to a metalinguistic order. They have indicated that the rising author, artist of the new electronic age, has to become a programmer, a designer, an architect of media systems, a composer of interactive processes. Many artists, working in telecommunications, have utilized this form of meta-art when conceiving their mostly interactive events, when designing processes that gradually unfold in time and space.

This newly developed (meta)-language has not been considered as an language in itself and therefore has never been seen as a corpus for serious investigation and further experimentation.

This essay proposes to review and evaluate these systemic teleart and telewriting experiments, in order to advance propositions that may orient other meta-discourses, establishing the foundations for a new (meta-) art genre.

2. Telewriting experiments

2.1. "La Plissure du Texte"

"La Plissure du Texte" was conceived by Roy Ascott, for the 1983 Electra exhibition, in Paris, as participatory, dispersed authorship. In December, during sixteen days, the world's first planetary fairy tale was telescripted via computer connections.

In a computer print-out Ascott proposed: "'La Plissure du Texte' is a collaborative story telling project using a computer timesharing network of artists located in Europe, North America and Australia. Artists using terminals in their own studios or at publicly accessible locations will be involved in a process of 'distributed authorship'. The video display and print-out of this collaborative project in the form of a 'planetary fairy tale' will constitute the contribution to ELECTRA. The text will be in French and English and will be generated as the result of each artist (or group of artists) at each terminal location adopting a role or identity (a sphere of action) drawn from the repertoire of fairy tales, such as villain, hero, helper, princess etc. Given the diversity of input, it is expected that the text will be witty, wise, bizarre, polemical, poetic and entertaining, creating 'plaisir' out of the 'plissure' as Roland Barthes might have hoped."

The ensuing 'fairy tale' utilized keyboard letters and numbers to depict fiction characters creating visual poetry in the white of the page.

2.2. "Épreuves d'écriture"

Proposed by Lyotard as an 'atelier of divergences', "Épreuves d'écriture" (Writing Proofs) was performed, through a computer network, by twenty-six French writers around fifty words relating to the problematic of immateriality. The collective text could be read at the "Centre Georges Pompidou," Paris, during the manifestation "Les Immatèriaux" from March to July, 1985.

The exhibition catalog reproduced the detailed plan of writing action created by Lyotard: "Around thirty authors comment a se-

NO. 457, FROM ASCOT TO NEXUS SENT 19.50 15/12/1983, FROM TRICKSTER; "La Plissure du Texte", excerpt of computer print-out, in: Heide Grundmann, ed., Art Telecommunication, Western Front Publication, Vancouver, Canada, 1984.

ries of thematic words previously chosen. They interchanged their texts by telematic means. [They] were able to freely interchange their writing, be it to refute, to modelize, to comment, on their own texts or on texts of other authors. A central memory allowed access to the whole set of texts … [that] could be searched either by one of the fifty words or by author. After two months, the experience is interrupted. The results are transcribed into paper. [They were also printed in the catalog.]" Lyotard, however, did not participate in the actual writing. He maintained his role as meta-author until the end.

The event was described by John Rajchman: "At several computer consoles positioned throughout the show one could read the meditations illustrious Parisian intellectuals and writers on 50 alphabetized and cross-referenced words such as Author, Desire, Meaning, Mutation, Simulation, Voice and Speed." (The Postmodern Museum, Art in America, October, 1985)

Lyotard emphasized the novelty of the process: "What happened to the writing? Confusion of authors and readers, of the public and the private? Hegemony of the context and of the pretext on the text? Telescoping of the phrase or craft writing? A sure strike: traumatism of the writer."

In fact, Jacques Derrida, one of the invited authors, has recently revealed that, in 1985, he refused to use the computer to write. His collaborations were digitized on the keyboard by someone else. This was the condition he imposed to accept to be part of the process. ("Entre le corps écrivant et l'écriture …" Entretien avec Jacques Derrida, [par Daniel Ferrer] Genesis, 2001.)

"La Plissure du Texte" and "Épreuves d'écriture" were pioneer events in which writing is co-performed through a computer network, inaugurating a new multipleform of authorship.

2.3. The Hearsay Project

"The Hearsay Project" was collectively produced by Laura Kikauka, Carl Hamfelt, Robert Adrian X, and Norman White at A-Space Gallery in Toronto, in November 1985, through the Artex Network. The concept was based on a children's game wherein a story is secretly passed around a circle of people, until it arrives back at the originator, who then reads out both the original and the final versions. In the Artex version, the goal was to involve as many languages and cultures as possible "focusing upon the semantic shifts brought on by translation."

The project was a tribute to Robert Zend, an hungarian-born poet who had just passed away. "The Message," a prose poem that Zend had dedicated to Marshall McLuhan, was to be transmitted and translated around the world and sent back to Toronto.

The original English version of "The Message" left Toronto at 5.33 of November 11th reaching Des Moines, Iowa, in the US. Each location had a four-hour limit to complete the translation. It was expected that the story would take a full day to complete its journey. The Spanish version left Des Moines at 7.30 pm to Sydney, Australia where it was retranslated to English and sent at 5 am to Tokyo, Japan. The Japanese version went to Vienna, it was turned to German, sent to Gwent, Wales where it turned Welsh; from there it went to Pittsburgh, where it was returned to English to be sent to Chicago where it became Hungarian and sent finally back to Toronto. In Toronto it was again translated into English. The event ended in the early hours of November 13th, slightly exceeding the expected time of twenty four hours.

"Hearsay" reached out the main artists and groups active in telart at that time, fulfilling its original purpose for global participation. Several nuances of meaning can be derived from this event. The poem itself is an ironic homage to McLuhan, depicting the arrival of a messenger who carries no message, who just likes running. It refers to the telesthetic pleasure of artists encircling the world with their texts and images, involved in an apparently useless activity.

If the original "Hearsay project" was already a very meaningful conceptual writing event, what about the final result? It is remarkable that the Message actually returned to Toronto, that the game was actually played out. The telematic homage was actualized and Zend's poem was vividly felt by bilingual translators around the globe.

2.4. The Reflux Project

Reflux encompassed a series of telecommunication arts events that spanned one and half years from January 1991 to March 1992. Works were exchanged through fax, computer, telephone, videophone, or regular mail, allowing for telecommunication art and language research among a worldwide community.

The project, created by Artur Matuck, evolved out of the idea that teleart events could be designed in terms of informational flow. Reflux intended to build a structure to entail different creative teams around the world to generate , and respond to, alogical art works. Successive phases were designed covering the event from inception to closure.

Reflux differed from previous telecommunication events in that it proposed a decentralized structure, suggesting an alternative model for planetwide communication. The network community were to act as a distributed ecosystem, without a supervising center.

Participating nodes would conceive proposals of dialogical art (influxes) and send them to the whole network. Each node, after receiving responses (fluxes) to its proposal, was to collect and resend them to the network, completing a movement of reflux.

The Reflux network included two production centers - at the Studio for Creative Inquiry at Carnegie Mellon University, in Pittsburgh, USA and at the 21st São Paulo International Biennial, in Brazil. Furthermore twenty-six nodes formed a worldwide electronic community distributed through several countries: United

Messages from the Blemyae. The Reflux Project. Dialogical Art Proposition by Artur Matuck.

States, Canada, Brazil, Australia, France, Denmark and Israel.

Interactive art proposals were quite varied in scope since the protocols did not limit themes or media. Most proposals, however, stressed the collective creation of texts and images. Teleactive media events also connected Reflux nodes from September 1991 to January 1992.

"Messages from the Blemyae" questioned our perspective towards Others inhabiting the borders of the electronic world. Found with other 'exotic people' in The Monstruous Rces in Medieval Art and Thought (John Friedman, Harvard Unviersity Press, 1981) the Blemyae represented what Reflux was denouncing: the Blemyaetization of the Other:

"The eneny is the Blemyae, a mediatic creation. Blemyaes, Sciopods, Antipodes are representations of the Other, inhabiting the borders. 'Blemyae – in the deserts of Lybia, according to Pliny, live men with their faces on their chests: they lack heads and necks ...´ To blemyatize is to interpret the skin, the facial expression, body, language, behavior and attitude as different than ours and therefore as undeserving humane treatment or misericordy." (Dialogical Art Proposition, Artur Matuck)

'Refluxers' devised original forms of teleconferencing and teleperforming , featuring individual and collective actions, produced by artists, intellectuals, children, and eventually by members of the public. The exchanges generated a strong sense of long distance companionship. 'Refluxers' felt they were sharing a privileged aesthetic experience, participating in a planetary connection.

The Reflux Project invited other artists to also perform as meta-authors. Many artists around the globe accepted the challenge and have sent their 'dialogical art propositions' to be actualized throughout the Reflux Network.

The resulting exchanges have shown that many levels of meta-art can be conceived and performed, producing collaboration and inter-esthesia among artists and non-artists. This seems to demonstrate that the idea of meta-art does not necessarily imply a hierarchy.

Furthermore it makes clear that informational exchange can take many forms that can be creatively devised and always reinvented, altering in the process human interaction and the quality of information itself.

2.5 Hall of Whispers: a Virtual Opera

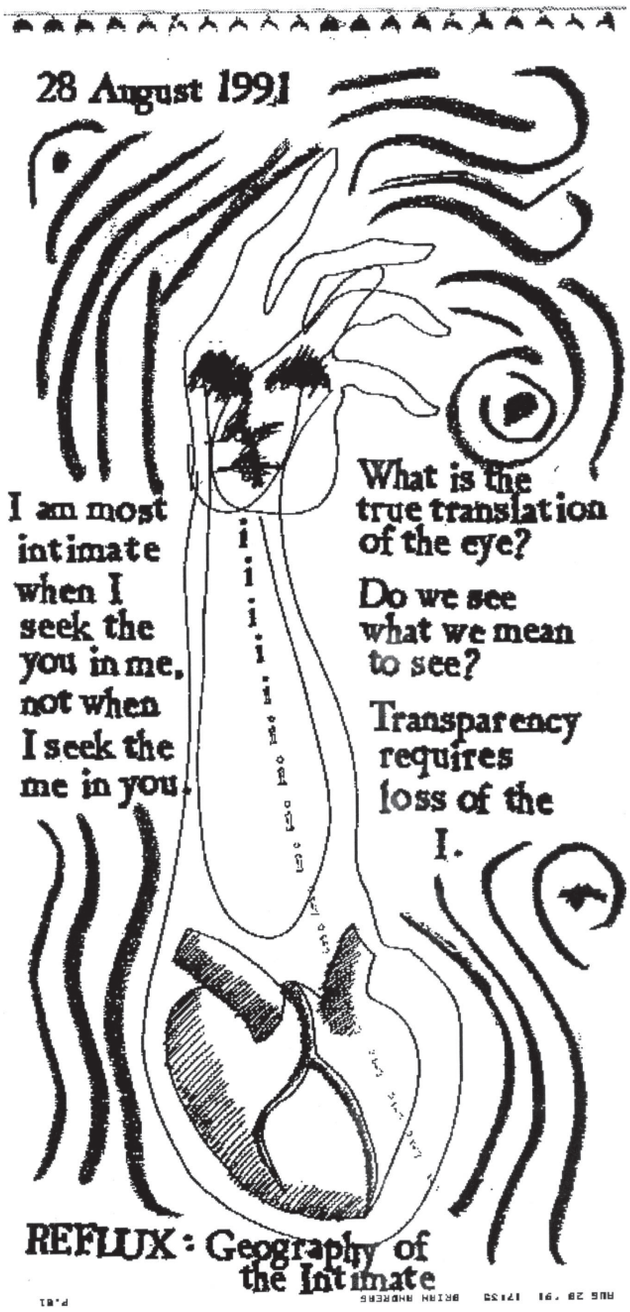
Brian Andreas's proposal for Reflux, entitled "Geography of the Intimate", previews many characteristics that he would include in his own telart project: "Hall of Whispers: a Virtual Opera."

The intriguing 'Geography' asked participants to share personal stories and images, secret dreams and fetishes, through electronic mail. It was intended to investigate "... ways in which our selves can use e-media as a means of psychic/spiritual connection with a larger human world."

"Hall of Whispers" in turn proposed "an interchange of stories about new worlds we feel rising within us". Andreas invited participants to "send their wishes for the future, their thoughts on the present, their meaning gathered from the textures of their lives to the 'Hall of Whispers'," through fax, electronic and standard mail, as he stated in the folder he mailed out.

Andreas would like authors to build a texture, to weave connections among the texts so as to create an intertwined written texture. He intended to utilize virtual space to reenact ancient myths, he wished to insert values that seemed antagonistic to computer culture:

"In Babylonian mythology, there is mention of a specially constructed room in one of the ziggurats where whispers stayed forever. Imagine the Hall of Whispers after centuries of collecting the changing voices of the world. Whispers collide with whispers. A story begins with one voice and ends with another. A story splits into first one, then two, then a kaleidoscope of meanings, intertwining, branching, flowering."

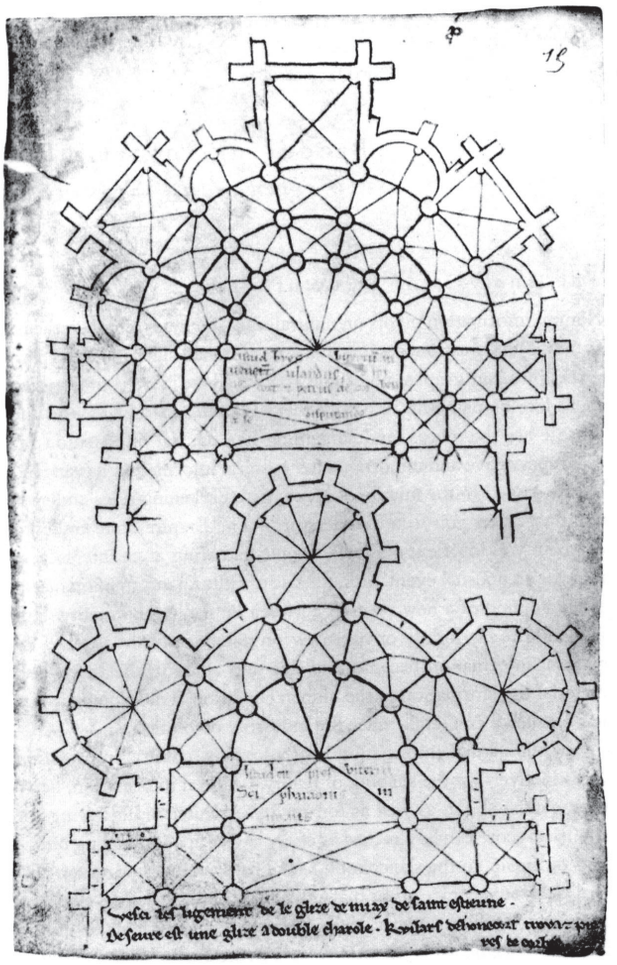


Geography of the Intimate. The Reflux Project. Dialogical Art Proposition by Brian Andreas.

Andreas metatext alternates utopian visions with poetic resonances: "The more diverse the participation, the more richly varied our connections will become. In the end, it is my hope that the 'Hall of Whispers' will not be a project about technology, but about human connection, and human understanding, and the strange and rich texture of the global opera we inhabit."

Andreas final purpose was to orchestrate an opera of humanized connections, a weaving of stories, memories, into one single tapestry, one unified manifestation of universal bonding.He wanted to demonstrated to artisans, craftsmen that electronic art making could be as humanized as any other form of craftsmanship.

"The text can be a story, a poem, a wish, the view out your window, the sounds you hear, things you've seen, surprising connections. In short, life as you experience it. I have never seen the world through your eyes, but I would like to, and so would all the



Page from the sketchbook of the medieval master mason Villard de Honnecourt in which plans about existing churches are mingled with plans offered as instructions for future buildings. Albert Borgmann, Holding on to Reality: The Nature of Information at the Turn of the Millenium, The University of Chicago Press, Chicago and London, 1999.

many other participants in the Hall of Whispers. Tell us all what you know, and see, and imagine."

The collective weaving of individual lines becomes possible because every text has a theme. "Now that you've told us your story, what would you say this story is about? Think of this as the core of meaning of your story. We will use this as your story's initial index. As other people connect with it from other sides, its relationships will expand, until it will carry a universe of meanings. … As the stories are connected with the stories from other participants, the connecting links are sent back to gather more connections."

"Hall of Whispers" lasted from September 1992 to January 1993. In the end, a movement of reflux was completed, a process that has been constant in all telart and telewriting projects discussed.

3. Contingency in Media Design

Albert Borgmann, in Holding on to Reality (University of Chicago Press, 1999) provides one possible theoretical foundation for meta-information, while advancing new possibilities for thinking the design process.

He distinguishes information about reality and for reality: "As a report is the paradigm of information about reality, so a recipe is the model of information for reality." Borgmann, however, stresses a limitation in meta-information: "No design can specify its realization fully. To convey exactly as much information as the thing realized, a design would have to exhibit just as many features as the thing. But then it would be a duplicate of, rather than information for, a thing."

The thing actualized is then destined to supersede the original design: "When the creative power of humans and the contingency of reality are consummated in a great work, the latter has a presence more commanding and expressive that that of a text, a score, or a plan."

Borgmann believes that the contingent, 'unexpected event' plays a very significant role in the actualization process. He affirms that many contemporary "thoughtful theorists … recognize that the fabric of reality is not to be explained by laws alone but through data, givens; … they acknowledge that the irregular residue of reality is more than inert or featureless stuff, that it bucks up against our plans and predictions."

He contends that: "Contingency comes to us as misfortune or good luck, as disaster or relief, as misery or grace." And then concludes that: "Contingency is inherently meaningful and so makes significant information possible." In Borgmann's perspective, therefore, the chance event, the contingency of reality, inevitable in the actualization of a project, enriches rather than devaluates the original design.

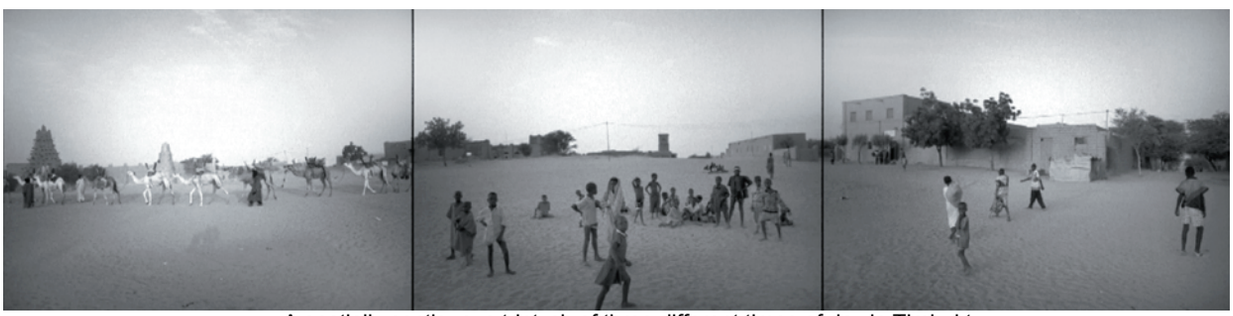
This perspective points out to a possible reformulation of the design process that instead of being oriented towards goals may become oriented towards processes. This conception implies flexibility during actualization, and a process of design open to contingency, able to incorporate the chanceful, the unpredictable, bringing, in consequence, the human factor.

Finally, for Edmond Couchot, in "Esthétique de la Simulation" (Art Press Special - Nouvelles Technologies, 1991) meta-authoring is a question of responsibility. He thinks that with the systematic introduction of chance, a decisive moment in the evolution of art in the last century, "… every representable thing or event were given the same importance." The French theorist then concludes that: "Everything is [or could be] art, provided that the artist assumes plain and complete responsibility for this transformation, [for this new status]."

A decisive question, however, remains. When and how, meta-authors would want, allow or wish to be responsible for contingent events that may run out of their control? Couchot asserts that: "… we should not fool ourselves, it is when the artist seems to be absent and leave the things for themselves, that he/she assumes more integrally his/her role as author," indicating how creative expression is being redefined in a digital age.

VR Webcams: Time Artifacts as Positive Features

Michael Naimark
www.naimark.net



A spatially contiguous triptych of three different times of day in Timbuktu

Abstract

"Virtual Reality" and "webcams" are currently incompatible suppositions, placing sensory richness in opposition to liveness. Large immersive images, sent through a "narrow pipe" such as today's Internet, must "accumulate" over time. Time artifacts result, since not everything can be transmitted at the same time.

Such time artifacts were explored using visual material from a previous art installation, filmed with a custom-built camera system, where such factors as frame rate, lens angles, and panning speed were known. Though the footage was pre-recorded, it approximated what a live "VR webcam" could be.

Scenes of the same places at different times of day were combined in various ways to simulate "narrow pipe" time artifacts. Studies produced from this footage suggest that time artifacts, while reducing the verisimilitude of the imagery, can increase its density or activity. In such "hyper-real" images, "more" can "happen." A "VR Webcam" is proposed.

Introduction

In 1560, Flemish painter Pieter Bruegel the Elder painted "Children's Games," depicting, like much of Bruegel's work, everyday life [1]. In it, over a hundred children can be seen actively playing dozens of games in a village square. Though the scene may have actually taken place, we know it didn't. Too much is happening at once, and all the action is perfectly composed. Not even Cecil B. DeMille could have created such a scene with a set and live actors. We assume that "Children's Games" is a realistic representation of an unrealistic event, an aggregate composition based on a "accumulation" of instances in Bruegel's memory or in his imagination.

In 1979, American cartoonist Robert Crumb drew "A Short History of America," depicting, in 12 frames, the progression of a single place from an untouched meadowland to a frontier village to an American street corner complete with convenience store and a clutter of power lines [2]. Even as a cartoon, the details are comprehensive. If a camera existed in the early days of colonial American history, and was positioned motionless in the same place for 200 years, "A Short History of America" could have been a time-lapse film.

Bruegel's painting and Crumb's cartoon are both place-based works depicting "accumulated" views, Crumb, over time in a progression of frames, and Bruegel, all at once. The elements that are accumulated, in theory, can be stored as separate data, and added or deleted interactively. This class of "hyper-real" imagery may be a model for cameras on the Internet.

The VR/Webcam Dilemma

The dream of "virtual reality" and the reality of "webcams" could not be further distanced. We associate VR with multi-sensory, high-bandwidth, immersive, interactive experiences, while webcams are associated with postage-stamp size images that rarely update faster than once per second. While the attraction of VR is sensory richness, the attraction of webcams is liveness.

This dilemma exists for several reasons, such as the need for rich, immersive source material and the need for immersive display technology, but the most prominent reason is due to the narrow pipe of the Internet. Consider that a good Internet connection speed for the home (e.g., DSL or cable modem) is rarely higher than 1 megabit per second. Uncompressed high definition television is one thousand times higher, 1 gigabit per second, and Imax is approximately ten times higher than HDTV. The bottleneck for an immersive "VR-like" webcam experience is the narrow pipe of the Internet.

Even with a narrow pipe, it is possible to use a great deal of inexpensive computational horsepower and digital memory at both ends. For example, one could build an immersive camera system (e.g., high definition, stereoscopic, panoramic) with a local host computer which stores short sequences and transmits them slowly to remote destinations, where they are restored.

Since such a system can not operate in real time, decisions about what to transmit will be necessary. These decisions can be of a smaller granularity than that of the actual frame. Consider, for example, having the ability to only transmit "interesting" elements from a common street scene - lovers walking hand-in-hand, a dog jumping in the air, a bird in flight - even if these events are not simultaneous.

Now imagine having a library of such events. One could under-populate or over-populate the scene as one desires. (Imagine an interactive Bruegel!) But the scene will never look perfect, in the sense of credible verisimilitude, because of time artifacts. Events occurring even a few minutes apart will often exhibit time artifacts due to the change of sunlight. Such artifacts are not of the sort easily fixable in PhotoShop. Semantic knowledge of the scene and events are required. Indeed, transforming an element recorded at night to appear during the day may never be truly possible.

Studies

What would such time artifacts look like? Will an image retain its wholeness as a "hyper-representation?" Will the place represented retain its "place-ness?"

These questions were addressed in a series of studies made from pre-existing footage from one of my earlier installations, "Be Now Here" [3]. Be Now Here was filmed in four "endangered" cities on the UNESCO World Heritage list using a custom camera configuration. It consisted of two synchronized motion picture cameras side by side (for stereopsis), 60-degree (horizontal) wide-angle lenses (for immersion), and a precision motorized tripod that rotated once per minute (for panoramics). In the final installation, visitors wore inexpensive polarized glasses for 3D and stood on a slowly rotating floor, rotating in sync with the image, resulting in the illusion that the movie was rotating around the visitors. Four-channel sound was composed from asynchronous recordings made at each location. (It is noteworthy that artificial accumulation of sound elements into a single composition often has no loss of credibility.) Five times of day were recorded at each of the four locations, plus in San Francisco.

Three studies were produced from the Be Now Here material to explore time artifacts [4].

The first study involved "match-cutting" three different times of day as the camera panned, starting with one cut per second and increasing to faster rates. The results are ambiguous, depending on what the viewer fixates. When one fixates on transient elements, such as people walking, the results are jarring. But when one fixates on the non-transient elements, such as buildings, whose color and shadows transform but remain stationary, the results appear smooth.

The second study required only two frames from the same location, with the camera pointing in the same direction, at different times of day. A small circular mask was made in PhotoShop that allowed a portion of one image to appear through the other. The mask could be moved in real time. The result was like an interactive "hole in time," with all non-transient elements (trees, buildings, etc.) staying perfectly registered. This simple effect appeared magic to many viewers, who thought much more was occurring. Anyone can replicate this effect with a camera, a tripod, and PhotoShop.

The third study was produced by projecting three images side by side as a triptych. Given the properties of the footage, several experiments were made. The most obvious was to simply offset the same footage by ten seconds between each screen, recreating a spatially seamless 180-degree scene of the same place at almost the same time. With no transient elements, the scene looked virtually perfect, since the sun and clouds did not change enough in ten seconds to be noticeable.

With transient elements in the scene, things become more complex. When the scene contains slow, prominent moving elements (such as a camel caravan in Timbuktu), the ten-second offset was enough to create mis-alignment of the moving elements between screens. When the scene contains fast, prominent moving elements (such as a security truck in Jerusalem), the repeated motion of the same element on all three screens is obvious. When motion occurs at the edge of the frame (such as a little boy standing still, then walking away at the instant his image exits the frame), this too is very obvious. But when many non-prominent transient elements appear in the frame (such as a crowd of people), the repetition on all three screens, offset by ten seconds, is difficult to detect.

Another three-screen experiment displayed the same place, spatially synchronized, but at very different times of day, e.g., dawn, mid-day, and early evening. In both a rural example (Angkor Wat) and an urban one (Dubrovnik), time artifacts were obvious: shadows fall in different directions, the sky and clouds change, and the color temperature shifts. Yet it's obvious that the triptych still represents the same place: "place-ness" appeared retained.

A final three-screen experiment displayed the same time, temporally synchronized, but in different places. Sunrise sequences were synchronized such that the sun appeared to move smoothly across the frame in Jerusalem, then continued moving across the next frame in Dubrovnik, then again in the next frame in Timbuktu. This sort of continuity is difficult to describe. The triptych clearly represented a noticeable continuity, but one that was more abstract than simple spatial continuity. Some observers noted the existence of continuity but couldn't detect what it was.

The Grounded VR Webcam

What makes such spatially coherent, accumulated images possible, in the end, is a grounded camera. Being physically anchored to a particular location, it enables perfect spatial registration on different image elements. This camera can be big, with immersive optics and robotic movement, and it can employ powerful computing. It can also be connected to the Internet via a very broadband connection (allowing "wide pipe" alternatives for destinations that also have such connectivity). It could also serve as a local head-end for smaller wireless cameras. Such an integrated system would be ideal not only for accumulated "hyper-images," but possibly for accumulated environmental data as well.

While much of the high-tech community is focussing on wireless, it is also accepting the compromises such low-bandwidth access entails, such as loss of large-scale immersion. Such a loss too often strips imagery of "sense of place." Grounded "VR webcams" offer an alternative and complimentary way of making and experiencing images, particularly place-based ones.

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[1] http://www.artchive.com/artchive/B/bruegel/bruegel_childrens_games.jpg.html
[2] http://www.crumbmuseum.com/history2.html
[3] http://www.naimark.net/projects/benowhere.html
[4] a web-based version of this publication, including video clips of the studies, can be found at: http://www.naimark.net/writing/vrwebcam.html

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Pockets Full of Memories:
The Collaborative Construction of a Digital Archive

George Legrady, Brigitte Steinheider

The talk will focus on the collaborative aspects of George Legrady's installation "Pockets full of Memories" in terms of its multinational production and audience contribution by analyzing the work process and the contributed objects and their descriptions.
http://legrady.mat.ucsb.edu/big_table.html

Case study: Pockets full of memories
The aim of the following case study was to apply this model to an international and interdisciplinary team working in digital media. The analysis addressed the development and the associated problems of a digital online art installation which was shown from April until September 2001 at the Centre Pompidou in Paris. George Legrady‘s installation “Pockets full of memories" consists of an archive of personal objects contributed by the audience. These objects were scanned and became part of an emerging data structure which has been organized by the Kohonen self-organizing map algorithm using attributes described in a questionnaire. Visitors described their objects with categories and keywords and evaluated them with a semantic differential between two poles, e.g. old/new, useful/useless. The ordering of the objects was based on the ways that the audience described them through the touchscreen questionnaire. The archive was projected large scale in the museum and could also be seen on the internet at www.pocketsfullofmemories.com. Visitors and internet users could retrieve the description of objects as well as add comments and stories to the objects via terminals.
The goal of the project was to include visitors in the development of the archive and to enhance interaction between the audience and the data structure.
This project was realized by a spatially dispersed team (Helsinki, Budapest, Stuttgart, Paris, Santa Barbara) with different nationalities and heterogenous disciplines (art, graphic design, engineering, cognitive sciences, computer sciences). Because of the spatial dispersion of the team, communication was done mainly via e-mail or telefon; team languages were English, French(curator/artist/Paris team) and Hungarian (artist/Budapest team). Due to the innovativeness and the integration of science and art concepts, the complexity of this project was rather high. The goal of the case study was to investigate whether the results of the teams in R&D could be transferred to other areas.

Development process
The artist met Dr. Timo Honkela at a EU CIRCUS funded meeting in October 1998 and was introduced to self-organizing maps. Timo Honkela worked with Kohonen and did his Ph.D. thesis on applying Kohonen‘s self-organizing map on data clustering. These algorithms are used to cluster biostatistical data in order to find sub-groups with similar characteristics. Since the artist is mainly interested in constructing archives, he was thinking how to integrate the capabilities of the SOM algorithm in his data oriented projects. They met again at the next CIRCUS meeting in Angouleme, France, and brainstormed on different project-ideas for EU-grants. At this time, the artist also met with Boris Tissot, a curator working for the Centre Pompidou to discuss an exhibition proposal and an initial version of the PFOM project came into being. Plans were made and funding requested from the Foundation Daniel Langlois for the Arts &Technology.
Production began in the early summer of 2000 even though the Centre Pompidou administration hesitated confirmation of the exhibitiuon due to the complexity of technological details.
The artist contacted different partners:
- C3, a Hungarian engineering/artist team based in Budapest, with whom he had previously worked together. Their part of the production consisted of the hardware/software development of the scanning stations.
- Projektriangle in Stuttgart, Germany, who were responsible for the visual identity and interface design of the installation.
- Timo Honkela and his team were responsible for the implementation of the SOM algorithm.
The project started in the beginning of July in the finnish forest with the Finnish team, where the first development and testing of the SOM took place. The first prototype was shown at the ISEA in Paris in December 2000, and the opening was on April 18, 2001 at the Centre Pompidou in Paris.

Team Structure
Overall, 12 persons were involved in the development of the installation, a group size which does not allow communication nets between all of the members. This situation was further complicated by fluctuations and an instable group structure, e.g. the leader of the Finnish team was involved only in the beginning of the project, afterwards one of his students carried out the task. The size of the team and the different languages also promoted the development of subgroups. In the beginning, the communication between the Finnish and the Hungarian team took place via the team leader, the artist, who forwarded all the informations. This situation caused misunderstanding since he lacked the knowledge about conventions concerning data formats.
Direct communication via e-mail between the two subteams solved these problems. Because of scheduling conflicts, there was no shared project‘s kick-off with all team members. Instead, the kick-off took place individually with all subgroups. This did not allow the establishment of precise rules and norms for communication and the development of a team spirit. Furthermore, most of the team members lacked concrete experiences with interdisciplinary

team work and only the Hungarian engineering/artist-team had knowledge about product development processes.

Communication problems

Due to the spatial dispersion of the team members, meetings were not often possible. Instead, team members communicated via e-mail. This made it difficult to build up trust between team members, in particular because only the artist and the Hungarian team knew each other previously. Team members had little in common. They spoke different languages and came from diverse cultural backgrounds, they differed in age (between 25 and 51 years)and professional expertise (student to seasoned professional). At the beginning of the project, there was little mutual respect and acceptance to be sensed between the subgroups. The atmosphere was not very confiding and there were tensions and competition between the subteams. As a consequence, it was not possible to openly address problems in the team and it was difficult to compromise. This was mainly due to the high ambitions of the younger team members who had little experience with team work.

Coordination problems

The time schedule war very tight and there was time pressure from the beginning: team work started in June 200 and the prototype was presented on a conference in December 2000. The keeping of the time schedule was further complicated because team members were strongly engrossed by other projects. Due to the little experience with team work several subtasks took longer than expected and were not finished in time and agreements were not kept. As a consequence of the interdependencies between the tasks, subsequent tasks were delayed as well.

Further problems resulted from team member‘s different objectives for this project. Every discipline overemphasized their part of the project and tried to optimize their tasks. As a consequence, additional tasks were performed or the subtasks could not be integrated. This was partly a project management issue. The complexity of the project made it difficult to prepare team meetings thoroughly. There was hardly any documentation as project solutions emerged out of production due to a desire for innovation. As a consequence, the project development phases could not be defined precisely and the planning of the project was relatively rough. The project leader did not want to determine the individual contributions because he wanted to learn from the different disciplines and to integrate their contributions. This offers on the one hand a big scope for the development and realization of individual ideas; on the other hand this open situation created uncertainties and increased the subjective stress. Moreover, even the legal situation was unclear: in the beginning, there were no binding contracts with the team members or concrete work packages defined.

Knowledge sharing problems

Due to the different knowledge domains, it was difficult to develop a shared understanding for the project in the beginning. First signs of mutual understanding occured only when the first prototypes were visualized. In order to cope with the tight schedule and the high workload, new persons were brought into production work. With each new member of the team, a common ground had to be developed again. A further problem was the (disciplinary)use of terminology since there was a different labeling of the same content; the resulting misunderstandings could be clarified by defining the important terms and concepts. Especially in the beginning, it was difficult to overcome the disciplinary thinking and to take over the other discipline‘s perspective.

This was further complicated by using English as the team language; sub-teams had their own meetings before official meetings to agree upon a shared position which they presented afterwards. The lack of experience with interdisciplinary collaboration was overcome by the high motivation of the group to develop this innovative installation. Many of the participants pursued their own goals through this project, e.g. international visibility by participating in a Centre Pompidou exhibition. These individual goals were motivational even through difficult phases at times of doubts in the successful realization of the project. Overall, the development process was estimated by most team members as „very intense“ but felt it was worth their effort.

Conclusion

In this paper, we applied our model of interdisciplinary co-operation to an international team working in digital art production. In the case study, it could be shown that new knowledge and innovation result from the confrontation with and integration of different perspectives, here the integration of the SOM algorithm into the context of digital art production. The results also show that coordination and knowledge sharing need to be enhanced since these processes were most problematic. In order to optimize the innovative potentials of interdisciplinary teams and to reduce team member‘s stress due to budgetary and time constraints, strategies and tools to support coordination and knowledge sharing have to be developed.

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Space-Time Correlations Focused in Film Objects and Interactive Video

by Susanne Jaschko

Abstract

With the invention of the moving image, carrying in itself the concept of space-time correlation, a whole new field of artistic experimentation emerged utilizing film as a basis for the transfer of space-time correlations into audio-visually perceptible representations. Around this topic, a number of outstanding works were produced that approach the challenge to design artistic and expressive transformations from different angles. These artistic representations of spacio-temporal data include sculpture in real space, 2D and 3D graphics, digitally generated video images, part of which are interactively accessible.

A Step into Art History: Space and Time in the Panel Painting

The art of central perspective, discovered by Brunelleschi towards the end of the Middle Ages and used to a huge extent in Renaissance painting, defined, in contrast to former painting, the art of the mathematical and the rational in painting. The space defined in a painting constructed with the help of central perspective is a space in which each subject is seen within the context of its spatial presence and in relation to other objects (and subjects). It is an organised space, whose ordering principle - the central perspective - was seen as a guarantor of harmony and beauty in the representation. Corresponding to this enlightened spiritual attitude an attempt was made in painting to combine it with the precision and the consistency of mathematics.

The possibility to determine locations for particular subjects and their distance from each other also implies a different presentation of time. The distance between two subjects in a mathematically constructed space also has a time-related meaning, in that a moment in movement is represented: The representation of the phases of movement, the freezing of a moment within a movement, makes the subjects seem more realistic. They were juxtaposed with each other within a contextual frame in a space-time relationship.

In the epochs successive to the Renaissance, the Baroque and Mannerism, the movement in and through space became an important artistic theme. Again the Baroque time was concerned with the presentation of key moments within a story, with a short time-cut from within a chronological sequence: What is interesting here is that the attempt to represent movement and thereby time in space, was in principle very similar to the methods of the cubists and futurists in the last century: they dynamised the painting space and represented the movement phases in such a pronounced way that one could imagine that they were attempting to portray the body at all possible stages of a movement.

2 The Extension of Space and Time through the Expansion of the Format

Other artistic concepts attempted to reach an extension of space beyond our limited eye view. Panoramas, that were discovered at the end of the 19th century, string together spatiality and break the central perspective through isometry or through vanishing points in the painting. In those days one could document landscape exactly through the use of technical aids such as the pin-hole camera.[1] Naturally the reality of a panorama was limited to the the human's eye view so that in the process of viewing the viewer had to turn on his/her own axis. Thus the illusion of a real landscape was evoked for the viewer. This effect must have been even stronger with the moving panoramas, which, in front of the audience, were slowly hauled from one roll placed on one side of the stage to another one on the other side, for example to simulate the movement of a ship. Thus panoramas can also be seen as the precedents for films and motion rides.

Panoramas represent therefore not only the extension of space through the positioning of stringing space together but also the extension of time through the build-up of chronological time. The simulation of a boat trip down the Mississippi was both a sequence of spaces and actions within a clearly defined time period.

Although moving panoramas are nothing but stills proper, they helped to produce the illusion of movement by causing the viewer to move his/her eye over the picture, getting a notion of time sequence, or by moving the viewer him/herself, or the canvas.

In photography the slit camera enabled the organisation of time on a plane. The camera takes only a vertical line, a minimal section of space over a restricted time-span. The result is the documentation of different time periods on one plane based on a cut through the space.

3 The Exhibition of Time Periods: the Moving Image

The need to present time and time-based periods in painting and sculpture culminated in the works of the futurists and the cubists, who now actually managed to form sequences of, and to abstract, single phases of the movement of the body through space and thereby produced new dynamic bodies.[2]

Looking back on these early attempts to present movement and time at the beginning of the last century makes the discovery of film seem an unstoppable and logical cultural step forward. Film was born out of an ever-growing need, based on more than just one moment, rather to document and represent, respectively, a period in time. Within our visual perception, single pictures shown one after another in fast succession became blended to a

[1] See Bernard Comment: The Panorama, The story of a forgotten art, 2000, Nicolai, Berlin (Engl. The Panorama, 1999, Books Ltd, London; Fr. Le XIXe siècle des panoramas; Société Nouvelle Adam Biro)

[2] Umberto Boccioni in the Technical Manifesto of Futuristic Plastic, 1912: „Sculpture must give life to the body, in which the extension of the body in space is represented in a clear, perceivable, understandable way so that today no one can claim that an item starts there, where another stops, all things , which are surrounding our bodies (bottle, car, house, tree, street), these things cut through it with curves and straight lines. (...) again in sculpture as well as in painting things can be achieved, as long as one does not look for forms of style for movement. The futuristic sculpture would address the codification of the light-paths and the interpretation of body movement. Transparent glass and shiny surfaces, strips of metal, wires, internal or external installed electric light sources would give the painted layer, the character, the tone and half tone a new reality."

moving picture, which occupies one clearly defined temporal frame, but also one place, defined through the position of the camera, the moving camera, the camera angle, the aperture setting and the focus.

The advantage of film was that one was able, for example to document time changes in cuts, whereas the first films that were produced were actually limited. Among the themes of the first short films, which could be filmed in one take with a static camera were everyday stories like the driving of a train into a station (Lumière Brothers) or people leaving a factory.

The next essential step leading to the art works of the present, which rather concentrate on the time- space relationships, and the moving image as metaphor and medium all in one, was the digitalisation of pictures which is a fundamental pre-condition for the real time-interaction with the moving image. The viewer does not need to subordinate to a chronological sequence but is rather able to focus, for example, on single cuts of film or single areas of the picture. Digitalisation and interaction enable an individual and complex representation of space and time frame in the virtual world by navigation along the time or space axis.

3.1 From film to film object

Film material is always understood as meaningful in that it is fixed both in time and geography. Owing to the technical means of today, it has become representable as such in the context of its space-time expanse.

As early as in 1994, Edward Elliot, who worked at MIT Media Lab, developed (in a dissertation under Glorianna Davenport) the so-called "Video Streamer," a tool mainly designed to view video films by presenting single pictures of the videos strung together to produce a picture-block. The block is not seen as a static picture but as a temporary, changeable manifestation of a stream of pictures. The block is composed of one half-minute video, where every new single picture on the front block is visible and with each new shot the pictures move backwards, completely disappearing from the block within half a minute. This viewing tool lends itself to the idea to edit video in a manner different from the traditional way, since the outer area of the block is composed of the outer pixels of the single pictures, and therefore is also "readable", in principle in a similar way as the picture from a slit camera.

A related, but essentially more complex concept was presented in the middle of the 90's in “The Invisible Shape of Things Past”, a work by Joachim Sauter and Dirk Lüsebrink, which explored time related to virtual space and navigation through virtual time.

In this work, film sequences are transformed into interactive virtual works. The transformation is based on the camera settings in a film sequence (movement, angle, and focal distance): The single film shots are strung together along the camera path when it is transformed into virtual space. The angle of the shots to the camera path depends on the angle of the real camera, the size of the single shot on the camera focus used. The pixel edges of the single shots form the outer surface of the film object.

The result is a film object that is based on a complex camera movement and virtual information architecture, respectively, and that can be interactively explored. It is the spatial interface for the information, which it contains.[3]

In a second step, a spatial and time based organisational concept for film objects was developed: As each film sequence occurs not only in one place, but also at one time, a virtual representation of the surroundings was constructed, enabling users to navigate through time. One such construction modelled all urban building structures of Berlin since 1900. [4] The film objects were placed in virtual reality at the place and time of the takes in the respective time dimensions.

The documentation of a particular space and time sequence is thus transformed into a perceptible space-time object with an individual aesthetic quality. Independent of their interactive application, these film objects, produced with the help of these transfer tools, have a particular poignancy because of their form that abstracts the literal picture material. This represents an interesting parallel to the sculptural work of the futurists, who used sectional methods to cut through space and time and achieved really expressive results, especially on a formal level.

Tamás Waliczky’s sculptures dating from the mid 90’s are based on a similar principle as Sauter/Lüsebrink’s films. For them, too, the starting point is digital film, and the results of the works are virtual sculptures, which, however, in this case are definitely only obtained from a space-time development of single visual objects/bodies.[5]

Waliczky extracted the movement of a person from digital film by cutting out the silhouette frame by frame. As a result, the single shots/frames are arranged a row forming a virtual sculpture, in which short moments of life are “frozen”. Waliczky refers to these sculptural works as "Time crystals", through which the viewer can move in different perspectives, at different camera angles, and at different speeds.

The work, "Field-Work@Hajama," 2001, by Masaki Fujihata, also starts from the principle that film material has a space dimension which can be transferred into a three-dimensional representation in virtual space.The starting point are digital video-shots that were recorded in urban surroundings in Tokyo together with the exact GPS data. From this a topographic and time-based system of co-ordinates was produced, since each video frame represents both a defined place and a particular moment of the take. Fujihata translated this system of co-ordinates into a virtual three-dimensional space, in which the video takes are displayed in virtual space in positions corresponding to those in which they were recorded and move alongside these three-dimensional GPS traces. Through the use of the interface the viewer is able to follow the video images and their paths and to navigate through the three-dimensional space and thereby experiencing the complexity of the interrelation of space and time. By the use of stereoscopic projection the viewer can perceive the picture three-dimensionally, from which, in addition to this, he gains an individual experience of the hyperreal information space through the interaction with the interface.

3.2 From film to cut through space

Film a visual concept originates from the correlation of time and space and can be understood in terms of a linear ordering principle, which attributes a particular spatial and pictorial

[3] One can click on the objects in every position, it is thereby a chronological sequence of single pictures as near as possible as the return of chronological sequences or the entry into a film at an arbitrary point.

[4] A possible application of this project lies in the mediation of a historical context, for example an urban situation. Films from different eras, which would be shot in different times in which geographically limited frame would be presented as objects, where the user can freely ramble in a time space context, meet the film objects and explore their content, and so understand their spatial and historical relationship.

[5] Tamás Waliczky, 1996: „For us humans, who are limited in time and space, time is a one-dimensional affair. We can move only along one axis we define in co-ordinates of "past-present-future"... And, sadly enough, even in this single dimension we are able to travel in one direction only, namely forward. But for God, who is eternal and in His dimensions infinite, time is perhaps a four-dimensional quantity; for God can see all three-dimensional existences, simultaneously and at any point in time. Therefore, for God it is a simple matter to change at will our perception of time. From His perspective, temporal measures such as a second, an hour, a year or even eternity are identical. I believe this may be a possible interpretation of the quotation from Koran with which Borges precedes his tale: 'And God made him die during the course of a hundred years; and then He revived him and said: >How long have you been here?< >A day or a part of a day,<he replied.“

configuration to a particular point of time. We see time as a linear dimension with a definite extension. In our perception, these experiences are congruent with the visual impressions of the film takes.

Both the film objects of Sauter/Lüsebrink and the sculptures of Tamás Waliczky visualise the spatial dimension of film as well. A further step which followed the conceptual idea of this type of representation is the cut through the film's space axis, a process that was developed by Martin Reinhardt under the name "tx-transform“ and was first shown publicly in 1998. In 1997, Björn Barnekow had conceived a very similar project bearing the title of "timemirror."

Tx-transform starting material is a traditional, digitally recorded or digitised film that is transformed with the help of software. In its original form, each single picture shows the entire space within a minimal time-span. By contrast, the transformed single film picture only shows a minimal spatial clipping and its complete development during the recording process. Each single picture is a cut through the space axis, a sequence of pictures produces visual effects such as the following ones: Houses start to move, moving trains become shorter with increasing speed. Thus, items in film are not defined as an representation of some concrete existence, but rather as a state in time. The result of tx-transformation can, depending on the mode of perception, appear completely abstract or completely realistic. Theoretically, these spatial clippings can be positioned deliberately, so that new perspectives and effects develop again and again.

Based on a digital slit camera is another project that combines traditional analogue clock with camera feed, creating a clock face that shows the history of the space it is looking at. “Last” by Ross Cooper and Jussi Angesleva transforms the slit pictures into a clock-like display: The clock's hands are narrow slits of the live video feed, and as they rotate, they leave a "time trace" on the clock's face. The hands are arranged as concentric circles, the outermost being seconds, the middle one minutes, and the innermost hours. Thus, the clock face displays the last minute, last hour and last 12 hours as its spatial history. The video feed can be any live video source: A camera mounted on the clock itself looking at what is happening in front of it, remote camera streamed over the internet or TV signal fed directly to the clock. The clock can thus display the local space, remote space or media space respectively. As a clock, the emerging imagery becomes contextualised and makes it meaningful in the space it is being displayed at. As an installation, the system can be used as a living, aesthetic element reacting to the usage of the space. As a still it documents the different types of spaces, similar to a spatial identity card.

3.3 Penetration into space and time

Camille Utterback and Romy Achituv also dedicated themselves to the representation of the correlation between space and time but their project again addresses the time axis. The installation, "Liquid Time" by Camille Utterback and Romy Achituv was based on traditional video-material that is played, in case of no interaction of the viewer, in the normal chronology of recording. An interaction system based on video-tracking enables the viewer to intervene in the chronology, moving backwards in time within a chosen picture area, or within space, respectively, while the rest of the film runs on chronologically.[6] What Utterback describes by the title "Video Cubism" is eventually the splitting of the video image into multiple time zones.

[6]In this way the viewer himself/herself provides the interface: Depending on his/her position/movement in space changing the picture zone, which is in front of him/her. The closer the viewer goes to the projection, the deeper he/she pushes into time.

A further concept of non-linearity and coexistence of different time zones in a picture has been developed by Romy Achituv alone and transplanted into the interactive application "BeNowHere." The panorama of a site was documented from one perspective at different times of the day. Within a drifting section of the panorama, the application shows a single moving picture at each stage. Parallel to the camera view, this picture drifts along the space and time axis and leaves a static picture, a trace of time and space, by means of the "last" pixels from the previous moving picture. The viewer can intervene now by using the input medium in order to focus on a section of the image and to activate the moving picture at exactly that point. This means that the viewer focuses not only on a particular space but also on a particular time, namely a point in time before each activated picture in case it is positioned to the left, and after the activated picture if it is visible to the right.

For Achituv this application demonstrates structural possibilities for non-linear cinematic narrative that break away from the reliance on "montage" as the basic semantic unit of cinema. On celluloid, time and space are inevitably fused: every film frame represents a particular space and a particular point in time. Transitions from one space to another, as those from one time to another, can only be affected through a "cut" (or a "fade" - which is no more than a sophisticated cut). The synchronised scenes of „BeNowHere“ suggest the possibility for playing with the viewers' expectations of space and time by affecting transitions between scenes based on user panning alone. This could be achieved by seamlessly integrating scenes. Instead of three different times of day like it is now, the application could be based upon three different scenes shot with parts sharing an identical backdrop (scenery, props, light etc.) The user/viewer then could push the "narrative" forward by transitioning from one scene to another simply through panning the image in different directions.

As we have seen already in the application “Video Streamer” by Elliot an also in “Invisible Shape of Things Past” by Sauter/Lüsebrink some of the experimental work with video imagery results in possible tools for the analysis and editing of moving images. The same applies to a project that was just recently developed at the University of the Arts Berlin. “4DDurée” by Sascha Pohflepp can either be used as a viewing tool or as an creative means for the manipulation and sculpturalization of images.

By selecting one or more areas within a frame it is possible to create a video sculpture in which the single bulges represent other time zones before or after the main frame. The staggering of frames inside the virtual space of an 3D environment illustrates the 4th dimension of the moving image and creates a virtual object inhering an artistic character in itself.

4 Conclusion

A number of contemporary and more recent art projects have transformed film-material into interactive virtual spaces, in order to break through the traditional linear quality of the moving image and the perception of time, at the same time to represent, or to visualise the spatial aspects of time respectively. In the times of resampling, the concentration on an relatively old picture medium and its transformation into a space-time phenomenon open to interactive experience does not seem surprising. The results of these experimental works exploring and shifting the parameters of the linear film are often oddly abstract and quite expressive in their formal composition, and, consciously elude simple legibility.

The development of space-time representations to the present documents the keen interest of artists to portray space-time correlations in their complexity by using methods of representation available at the respective times. Any obvious step towards an innovative way of representation each time implies a radical break with old concepts of visual art. Both the

interaction with film and the representation of the space-time characteristics of film in virtual space, which, in the described works, are fathomed by experimental and artistic means, represent a conceptual expansion of the film medium and a break with traditional perception. In a similar way, for example the panorama picture once broke with the traditional understanding of the work of art of the preceding century.

“IMAGINEERING”

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abstract

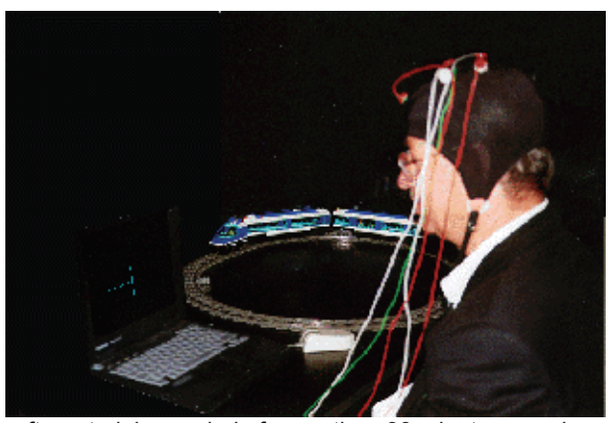
the bioelectrical acitivity of the brain (EEG) is being used to control a cursor on a computerscreen to finally communicate via an interface with the outside world. this high-tech sophisticated brain-computer-interface (BCI) has to be fed with imagination, the archaic domain of the artist. information is the common denominator of “imagineering” to create a truely coherent “art-science” that’s what culture begins with.
“imagineering” has been built to melt imagination and engineering, art and technology, personality and society, culture and politics. the audience is being asked to take part in the installation to proof its own power of imagination, whereas five handicapped artists communicated via the internet to create in contradiction to their own bodies “a perfect virtual body” by the means of communication only.

1.dead living bodies

art has ever been comprehended as a process of expression. the internal status of the brain-body interrelation of the given artist had to be processed into form, content and gestalt to communicate with the outside world.

the orthesis (mechanical hand) of the paralysed patient is being steered by the power of his own brain.

in the metaphor of externalisation of the mind, the bio-electrical acitivity of the brain itself (EEG) is being used to control a cursor on a computerscreen. this channel of communication from the inside of the body to the outside world must be loaded with information. this information stems from pure imagination only.
with the brain-computer-interface (BCI) an interface to the physical world is provided. the body itself has become the computerscreen. the cursor has become the tool to reincarnate the “dead parts” of handicapped bodies by mental activity only “imagineering” is grounded in complete analogy to the expressionistic concept of the artist but based in an information assisted environment. in this environment the real new artist is a truely handicapped, but information assisted figure. in trying to communicate with the world he/she must imagine the action only. the realisation is being executed by the information assistants.



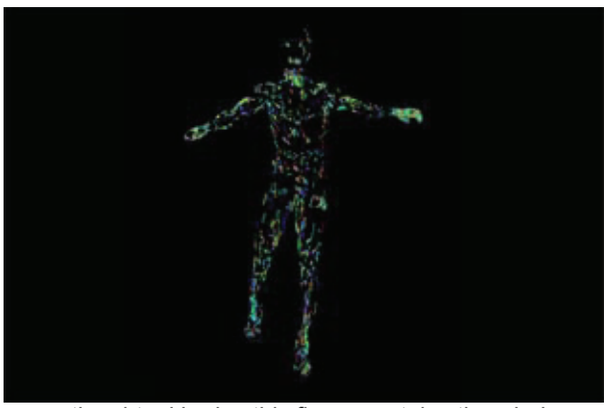
after a training period of more than 30 minutes members of the public try to steer the „lego“-train according to the randomly given instruction by the computer either in the one or the other direction.

all this is in correspondence with the arts from the inspiration to the final realisation in an artwork, but executed by the artist, or at least signed by him/herself. this artistic structure of processes mustn’t be further understood as an extroadinay mental procedure. as “imagineering” can demonstrate, this brain-body-activity is ordinary to all the human internal and external processes, even though the realisation looks extroadinary.
in order to demonstrate the realisation of the art metaphor of “imagineering” the audience has been invited to a 30 minutes training with the brain-computer-interface (BCI) in the exhibition. according to the power of imagination –and training procedures- the users had been able to steer an electric train either in the one or the other direction, at will.

2.information based bodies

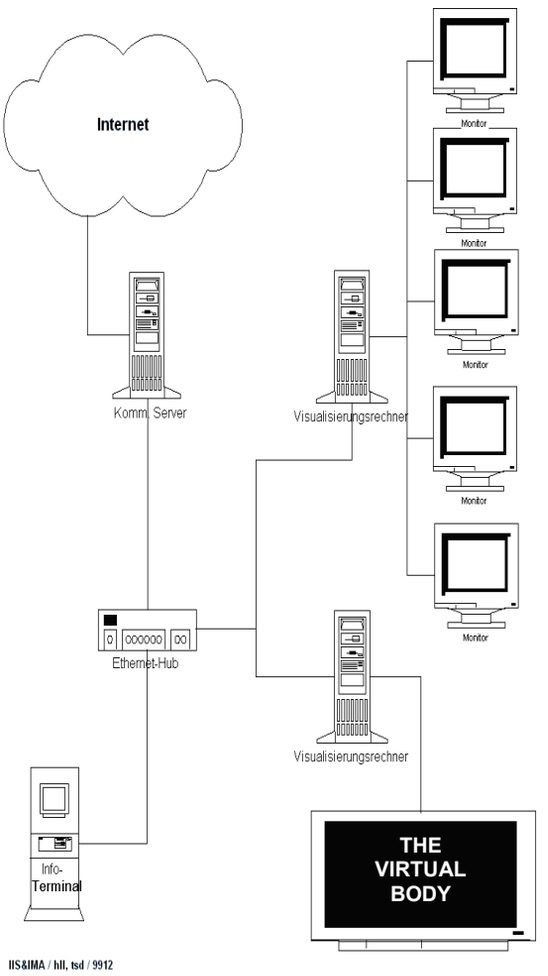
installation view. on the 5 monitors the handicapped artists communicating live via internet between themselves and the public in the exhibition.

"imagineering", comprehended as the common ground of advanced artistic and basic ordinary expressions, has been pushed forward to an experiment incorporating five 'truely handicapped artists' as the grand metaphor of the humankind in the face of information technology. (blind, left hermisphere paralized, right hemisphere paralized, two wheelchairdrivers.) the mental processes of each of the five artist have been communicated via internet to finally create a 'complete virtual body'



the virtual body. this figure contains the whole datastream between the artists themselves and the public during whole period of the exhibition (6 months).

INSTALLATION
graz, "dome in the rocks"
2000



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Notes on the Fabrication of Synthetic Senses

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Abstract

This paper argues that new synthetic senses can be designed for humans. Scientific visualization maps the output of a range of sensors into the visible spectrum, showing how these phenomena would appear if they were visible. These are only representations. The present work aspires to go beyond representation to the direct perception of physical properties not now available to the human sensory apparatus. Sensory substitution systems allow blind users to 'see' using the output of a video camera mapped onto the surface of the skin or to the tongue. Artificial vision systems prove that spatial distributions can be apprehended through surface receptors by means of a systematic variation in stimulation modulated by bodily movements. The transduction of a range of physical properties no more accessible to normal human perception than light to the blind becomes possible in principle. Its realization is a matter of empirical investigation. Artificial senses are sought, in part, to enable a richer world to become a part of direct human experience, and to open new aesthetic fields to investigation.

1. Introduction

Human sense modalities apprehend a minute fraction of the available spectra, yet constitute a significant portion of human experience. Direct experience forms that basis of abstract reasoning and grounds language. What are here called 'synthetic senses' are a class of technological devices that will allow for the direct experience of physical conditions or spectra that are not now available to the human sensory systems. The objective of this research trajectory is to develop strategies that will allow for the design of interfaces between manufactured sensor technologies and the human in a way that facilitates direct experience. Extensions of the range of experience available to humans will provide for the possibility of bringing forth a richer world. Prototype devices are currently in development at the Laboratory for Human-Environment Interaction at the School of Architecture of Rensselaer Polytechnic Institute.

In order to craft sensory augmentation devices that will yield perceptions of additional aspects of the world, it is important to understand how the perception of external objects, events and conditions arise. The possibility of 'synthetic senses' is opened by an understanding of perception as an active engagement of an organism with its media rather than of perception as the function of specific nerves or organs.

2. Organism and Environment

Maturana and Varela [10] propose that organisms are bounded by a membrane inside which they continuously reconstitute the processes that give them their definition. An organism can only access the internal states of its sensory apparatus and realizes changes of sensory states based on the operation of its effectors. Sensory states are not representations of the outside world [11], rather, dynamics of sensor states in conjunction with the dynamics of effector states allow the organism to "bring forth the world". Helmholtz [7] understood that the relation between an organism and its environment was based on activity – that space was 'charged with the qualities of our sensations of movement'. Notions of self must result from the same process, by the dividing of sensations invariant to movement from those that change with it. Cognition is inextricably bound up with the dynamics of behavior.

Robert Irwin [8] notes that the focal awareness of a blind man using a cane resides at its tip not at the interface of cane and hand. The cane is a simple but effective sidewalk sensing technology with a cutaneous interface. It is significant that the perception is of the world, not of the physiological mechanisms that give rise to the perception. When in active engagement with the world, one's perceptions do not come in individual modalities that are experienced separately, but the experience is of that to which one attends. Holding a steel bolt in one hand involves apprehending its thermal transfer characteristics, the roughness of its threads, its color, reflectance, its inertia in motion, the sound it makes in contact with other surfaces and so on. The perception is of the bolt and not the individual percepts. Similar experiences are obtained by holding a nut in the other hand, until one begins to thread one into the other, whereupon the attentional focus shifts to the surfaces of contact between the two. Gibson [6] distinguishes between 'exploratory' and the 'performatory' engagement with the world.

O'Regan and Noë use the term 'sensorimotor contingency' to describe the systematic variations in sensor states that arise from the active engagement of an organism with its media [12]. These contingencies are dependant upon both the properties of the media and the organism. O'Regan and Noë assert that it is these contingencies that give sense modalities their respective qualities. Vision is not the sense of light striking receptors in the retina as traditionally understood, but a mode of exploration mediated by distinctive sensorimotor contingencies. Therefore, vision does not depend upon the eye or optic nerve. Sensory substitution strategies are cited as a case in point.

3. Sensory Substitution

Sensory substitution strategies allow the blind to have an awareness of spatially distributed objects and bounded spaces

by applying video of the environment to the surface of the forehead, back, arm, thigh, fingertip or tongue using vibrotactile or electrotactile stimulation [1,2,3] Significantly, the apprehension of spatial conditions only arises with learning over time and with volitional exploratory movements within the environment. Lenay et al. [9] report that with movement comes a "spectacular ability to recognize forms…accompanied by an exteriorization of the percepts, which become objects located in space"

Similar strategies have been employed in rehabilitation medicine that have allowed the deaf to discriminate speech by means of vibratory tactor (www.tactaid.com) applied to the skin. Borg [4] developed a specialized eyeglass frame containing microphones and vibrators to aid the deaf in sound source localization. Short-range sonar rangefinders have been used in conjunction with belt-mounted pager vibrators to aid the blind in navigation [13]. The Navy developed the Tactile Situation Awareness System [14] that aids pilots, astronauts and divers in maintaining orientation in conditions in which the vestibular and kinesthetic senses do not operate or yield erroneous perceptions.

4. Synthetic Senses

In rehabilitation, the objective is to replace missing or faulty sensory perceptions by means of technological augmentations that map elements of the normally perceivable spectra to alternative sense modalities. These devices serve as the proof-of-concept for research in 'synthetic senses'. From the standpoint of the blind or deaf individuals, these devices have allowed for entirely new experiences of the world. In a similar way, this research agenda generates non-normative senses derived from manufactured sensor technologies.

Bach-y-rita [1,3] asserts that we see with our brain not with our eyes. (To generalize, we perceive with our brains not with our senses.) His research also suggests the development of sensory augmentation using "any device that captures and transforms signals from environmental sensors". However, no attempts at designing devices that do not duplicate common human senses have been found.

A cutaneous interface has been chosen for the initial prototypes to make use of the existing body of knowledge in sensory substitution systems, and in addition, to allow normal sense modalities to remain operational while targeting under or intermittently used sensory capacity on the surface of the skin. Probert, Lee and Kao [13] attribute the limited success of certain navigation aids for the blind to the use of audio bandwidth which is critical to a number of simultaneous orientation and navigation tasks for a blind person. The cutaneous interface allows new sensing capability to augment rather than replace existing senses. The isolated perception that arises from the instrumentation developed in this proposal will be reinforced by its synthesis with the full range of normative sense modalities. Keeping existing perceptual channels free to corroborate the new sensations is an objective of the device design. It is recognized *a priori* that the objective of this research is not in the production of the 'synthetic senses' as technological artifacts or as isolated sensations, but rather in the ways in which the new percepts augment and modify the apprehension of the world given by existing sensory modalities.

The design and implementation of 'synthetic sensing' devices is underway, is relatively straightforward, and has been given clear direction by prior work in sensory substitution. Instead of hardware development, the research focus is to understand the relation between the sensor, the kinds of information that it can deliver and the manner in which that information is applied to the body in order to give rise to a perception that captures salient dimensions of the phenomena. This is fundamentally an iterative design problem. In addition to specific devices, we expect to produce an accumulated body of experience that can be used to generate the principles by which arbitrarily chosen sensor technologies can be interfaced to the human body with particular attention to the qualitative aspects of the experience.

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Body Brush

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Abstract

With the development of a novel motion capture and analysis system using frontal infra-red illumination, and based on a systematic study of the relations between the human body movement and the visual art language, the Body-Brush turns the human body as a whole into a dynamic brush. The Body-Brush enables humans to interact intuitively with the machine to create a rich variety of visual forms and space.

Introduction

Indeed, the concept of body-as-the-brush has been a hot topic explored by a number of artists and researchers. By applying the methodology of action painting, Jackson Pollock [5] transformed the body energy and human subconscious into vibrant brushstrokes on his epic size canvas. In a series of performance, Yves Kline used live colour-coated human bodies as brush to paint directly on the canvas. By struggling his body in the mud, Japanese artist, Kazuo Shiraga, created sculptural painting titled "Challenging Mud" [7]. In one of the famous Fluxus event, the Untitled Marching by George Maciunas [8], a group of artists marched across the snowfield and their bodies re-sculpted the environment.

Recent years, researchers made use of the advance of information technology and motion capture system to enable human body to sketch in the virtual space. Biped, a new work by choreographer Merce Cunningham, in collaboration with digital artists Paul Kaiser and Shelley Eshkar, translated the dancer's movement into animated virtual forms which were projected onto the stage screen. DanceSpace [9], an interface developed by researchers in the MIT Media Lab, used their self-developed tracking system Pfinder (person finder) [10], a real-time computer vision input system, generates computer multicolored graphic trail and music in corresponding to the motion of different parts of the dancer's body.

These approaches all share two conceptual grounds. (1) The human body movement and gestures are significant human expressions which communicate messages of human inner conditions and human interaction with the outer environment. (2) The message can be communicated in different forms and processes. You may encode the message with paint, mud, snow or digital virtual simulations. In this paper, we will illustrate a real-time body-driven human-computer interface, the Body Brush, which is able to capture human motion and transform the motion data into vibrant visual forms. This interface can preserve the 3-D information of body motion. It enables users to interact intuitively with the machine and control the rich visual simulation in synchronization with the body motion.

With a systematic study of the relations between the human body movement and the visual art language, the Body-Brush turns the human body as a whole into a dynamic brush. This is achieved with the development of an immersive computer-vision-based motion analysis system with frontal infrared illumination, and an innovative graphic rendering software mapping the body motion gesture-path-energy to the colour-form-space visual attributes. By controlling the mathematical centres of the body, the motion speed and acceleration, the gestural spatial dimensions, and the body trajectory, the user can create 3D drawing and painting in a virtual 3D canvas. The same set of motion data can be also mapped to simulate a multitude of sculptural forms and architectural spaces. As a result, the sketch in the real space by this body-as-the-brush is transformed into the shaping of the virtual visual space.

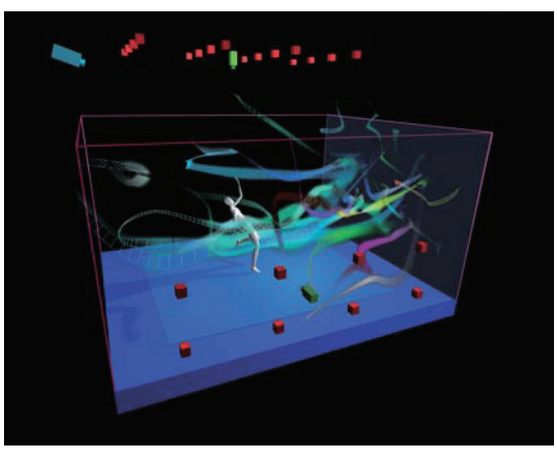


Figure 1. Illustration of the Body-Brush Interface

Frontal Infrared Illumination Motion Capture System

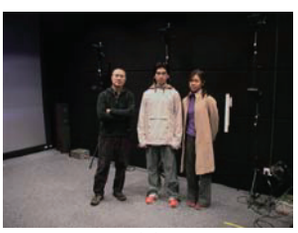
We have developed a novel motion capture and analysis system using frontal infra-red illumination to capture human body motion data in the 3D space. With two arrays of frontal infrared illumination, the silhouette image of the well-lit human body can be easily segmented from the background. The advantages of this system are: (1) This system can extract 3D motion information of human body in a vast space. (2) Since the reflection of infrared depends not on colour, the interface is highly ergonomic and robust as users are not required to wear specific colour clothing or sensor devices. The user can move unobstructed and express freely in the space. (3) The infrared-sensitive camera, filtered incoming light with an infrared-pass-and-visible-blocked filter, is not sensitive to the change of visible lighting condition. It makes possible to install this system in environment with changing video projection. Changing studio lighting is also possible if the infrared wavelength can be filtered. (4) This motion capture and analysis system is inexpensive, and portable.

This system treats human body as a single 3D mass. It does not aim at extracting detail information about human gesture. By analyzing the two orthogonal silhouette images, it is possible to extract the position, the body shape, the body dimension, speed, acceleration, and the rate of change of body gesture/motion on the x-y-z planes. In a word, this system sees the motion human body as a whole as a dynamic form of energy.

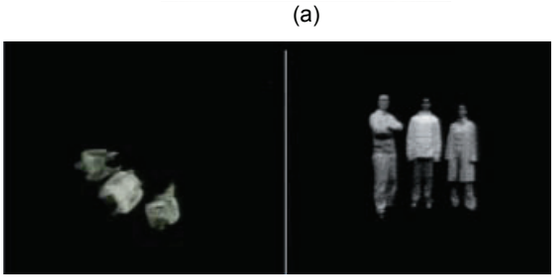
There are many different techniques to construct a motion capture system involving camera vision, such as chroma-keying [1], background subtraction [10], or rear-light projection [4] / rear-IR-projection [2]. However, each of them has it own limitation. For chroma-keying, a background with evenly distributed colour and illumination is needed. The background

subtraction approach requires the colours of the foreground objects to be different from the colour of the background. Computer cannot separate objects from the background if the colours of the objects and the background are the same or similar. Although the rear-light or rear-IR- projection are good at producing sharp silhouette images (black human body on a white background), these two techniques need a lot of space and hard to create a well-lit ground floor for obtaining the top view of the user thus the motion data along the x-y-z-coordinates.

In our approach, background subtraction with frontal IR illumination is used. In order to produce silhouette images with high contrast between the foreground objects and the background, we use two infrared-sensitive black and white cameras (with IR-pass and visible-block filter), and two arrays of IR lamps. IR light can help to segment the user's body from the background easily because the visibility of the human body does not depend on the colour of fabric on the human body. The computer can see the user clearly even he/she is wearing black clothes standing in front of an IR-absorb wall. Our background (the walls and the floor) is made of IR-absorb material which is invisible to the IR sensitive camera with visible-blocked-and-IR-passed filter. As long as the user's clothes can reflect IR, we can capture images with the user's body (bright) in contrast with the background (dark). These high contrast images reduce the computational complexity for separating the human body from the background based on background subtraction techniques, hence achieving real-time computation requirements.



(a)



(b)

Figure 2. Computer Vision. (a) Photo taken under visible light showing the clothing colour. (b) Top-view (middle) and side-view (right) captured by the computer through camera views sensitive to infrared illumination only.

System architecture

The video images of the motion body are taken at orthogonal angles by the two infra-red sensitive cameras mounted outside of the 3-D canvas. From the two streams of video images, the user's position within the 3-D canvas space is calculated and the body gestures of the user are extracted and analyzed at video frame rate using a graphic workstation (SGI Octane). A number of numerical measurements relating to the user's gesture are computed and these measurements are translated into various drawing attributes such as colour (hue, value, saturation, and opacity), stroke path and stroke cross-section (for 3D modelling). Finally, these drawing attributes are painted onto a pair of stereo-images and projected back onto the 3-D canvas in synchronization of the user's movement, enabling real-time interaction between the user and the virtual painting and sculpture.

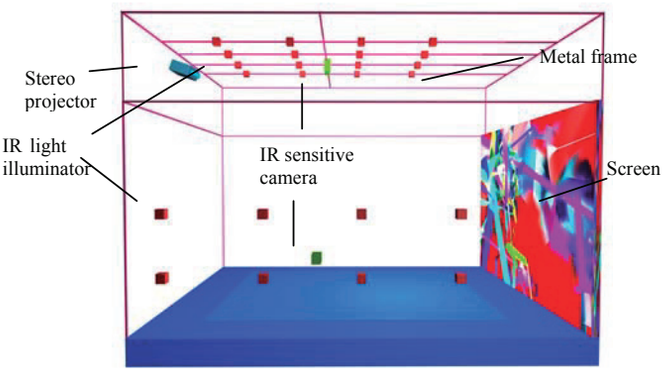


Figure 3. Illustration showing the setup of the Body-Brush Interface

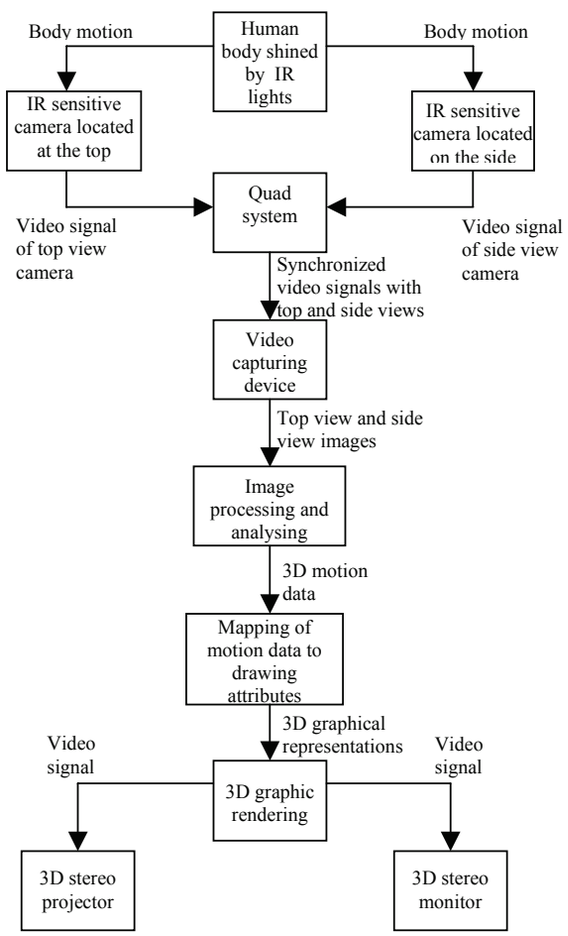


Figure 4. System architecture of the Body-Brush Interface

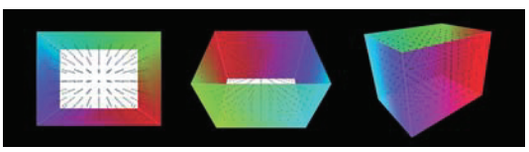
Visual Simulation

The pictorial space activated by the 3D labyrinthine brushstrokes and structural forms, visualized through stereo projection simulation, reflects the intuitive responses and the visual judgements made in the process of man-machine interaction. Since the visualization is in real-time, constantly the user has to make decisions on the forms to be created and the colour to fill them. Of course, the user can choose not to exercise

such conscious feedback and let alone the outburst of primal energy and a spread of intuition over the 3D virtual canvas. Thus, by studying the patterns of such numerical information and its corresponding visual significances, it is possible to reconstruct particular cognitive process undertaken by the user.

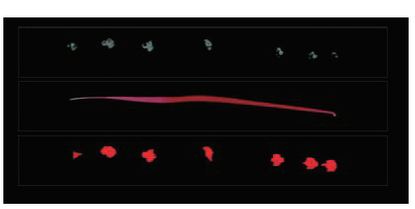
The relationship of the visual simulation and the motion pattern is built upon our visual intuition. Some major mappings are as below:

(1) Colour Hue: When the user enters the outer ring of the space, the body will be attached with invisible color(s). The hues are clearly marked on the floor in 360° and users can choose which hue or a range of hue to be chosen.



(2) Colour Value: The value is related to the speed of the body motion. The faster speed signifies a lighter sensation of body. The lighter body will give brighter colour. A slower body motion will give darker colour, and even black.

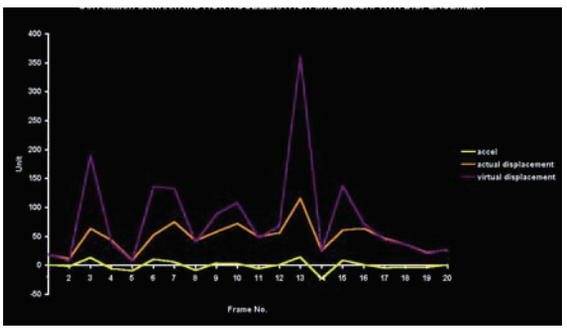
(3) Colour Saturation: The saturation is related to the acceleration of the body motion. When accelerated the body, the body becomes more vibrant. The vibrant body will give more vibrant colour. The acceleration will turn the colour more saturated, while deceleration will turn the colour pale.



(4) Position: The 3D position of the body-brush is related to the median points of the body as seen from the side-view and the ceiling cameras in orthogonal directions. At time of motion, the changes of height on the farthest left and right positions of the human body are added to the change of mathematical center from the side-view.

(5) Brush Size: The body dimension as seen from the ceiling view will determine the size of the brushstroke.

(6) Virtual Brush: When Jackson Pollock spreaded the paint with a thrust, the paint will not just fall along the path of his hand. In the interface, we also take into consideration the force exerts on the "paint". If there is an acceleration, the 3D path of the brushstroke will be exaggerated accordingly. This "Virtual path" simulates our intuitive conception about painting action.



Graphical User Interface

The Body-Brush GUI (graphical user interface) enables users to define their body-graphic mapping relations, and to walk-through the virtual space and perceive the artwork with different camera positions and composition frames. This viewing pattern, including the camera path, the preference of visualization environment, and the time lag as well as the camera orientational changes when searching for a new visual destination, can be tracked and documented in the computer data bank. Using this GUI, users can pre-define the visualization environment of the visual output in synchronization with the body motion. Moreover, a rich variety of post-production features, based on the same set of motion data, are available.

In this GUI, a special feature, Track Camera, can record every detail of the viewing setting and the process of walk-through navigation. That means, the information about how the user defines the visual environment, what visual composition the user chooses, what viewing path the user has come across, and even how much time the user hesitates before finding the next visual destination, all can be tracked and stored in the computer data bank.

By analyzing these information, we can decipher how we construct the meaning of visual signs, and derive certain aspects of human expressive and perceptual patterns. Thus, what the Body-Brush can simulate is not just the virtual graphical space in correspondence with the 3D space of the human body, but also the mental cognitive space activated by the man-machine interaction.

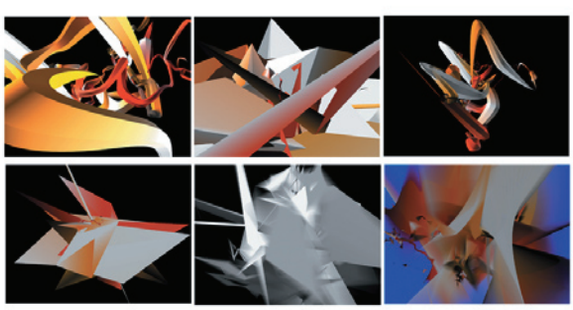


Figure 5. Examples of visual variations generated by one single set of motion data

Future Development

Since its launch in Dec 2001, the Body-Brush has been demonstrated to numerous local and international visitors, such as painters, dancers, scientists, psychologists, businessman, school students, etc. It was particularly interesting to observe that those local young children, at first shy and withdrawn to

dance their body in front of other fellow classmates, gradually regained the confidence of their body as well as their creativity, when discovering that they could interact intuitively with Body-Brush to create vibrant colours and forms.

Body-Brush can be applied in diverse domains. Professional visual artist can use this intuitive interface to create rich 2D, 3D or animated visual artworks and polish the visual presentation with the professional GUI. Choreographers and dancer can augment their dance performance by transforming in real-time their dance into rich visual simulation. It can also provide an unique visual experience for audience in museums, galleries, or any public venue. No prior training is needed to for general audience to create vibrant pictures out of their body movement. In some sense, this interface liberates human creativity.

This interface can provide an effective tool and data bank for psychologists, cognitive scientists, and scholars of aesthetics, to study human perception and aesthetics. This interface can also be applied in educational and therapeutic sectors. Psychologists can use this tool to enhance the self-confidence and ability to communicate among psychiatric patients. It can also be an art therapy session for facilitating children to explore the relationship between their body and the visual expressions.

Future development of the Body-Brush will focus on the expansion of the audio-visual feedback dimensions of the interface. A new research, Body-Baton, aiming at transforming body motion data to simulate sound and music, has been gaining its momentum. This project, when combining with the Body-Brush, will enable us to "see picture from music and hear music from picture", through a systematic mapping of the relationships between the body movement/gesture, graphics, and music.

Furthermore, we are working to stretch beyond the space in which the traditional expressive media has been confined. Perhaps what the traditional media can never achieve is the network collaboration. Since it only requires a minimal amount of body motion data to be transmitted between computers, the Body-Brush interface can enable a seamless interaction between several human and machine units over the computer networks. That means, artists, dancers, and people with different socio-cultural backgrounds and in different countries, can collaborate, via the internet, to create a rich variety of visual expressions in the same virtual canvas and in real-time. The resulting pictorial rhythm and symbolic diversity will signify an expansion of the geographical space as well as our cultural space.

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Complex Poetical Practices & New Technologies: the creation of a writing agency : agence_d'écritureS®

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Abstract : *This text highlights the issues of a complex poetic strategy intended to tackle the multitude of contemporary textual mutations.*

Never before has text – and more so the language phenomena as a whole – seen such a thorough and rapid shake-up. Radical transformations are disrupting categories and usages, some of which are several centuries old, that have culturally imprinted our relationship to textuality: *text consistency, author's style, terms and conditions of document distribution, trade and archiving, role of the library, legal principles vis-à-vis intellectual property, reading practices, etc.*

The marriage of two major interwoven technological events, the global digital expansion and the astronomical evolution telecommunications networks, contributed greatly to the birth of a worldwide advent: the Internet. The Web has produced a plurality of totally new inscriptions and sign usage: *simultaneous global connection*; *uninterrupted circulation of written messages*; *hypertextual navigation*; *interactivity*; *screen mediatised perception*; *privilege of virtual over printed*; *document transfer at light-speed*; *copy/paste interplay*; *text to sound, image and video linking*; *index search using superpowered engines; automatic online translation, etc.* Nevertheless, the Internet is one of the devices, at the heart of the *multiplication* of tools with this dual digital and connective power, that will henceforth include textuality under a global umbrella, within which all its reallocated and increased constituents will proliferate according to now global *circulation*, *interaction*, and *ongoing transformation* measures.

Only a *strategy* capable of responding to the excessive spread of mutations that affect our relationship to language, can deal with the extreme complexification of situations, brought about by all the current upheavals, through the development of informed, appropriate and fluid procedures. Setting up an *agence_d'écritureS®* is a *strategic decision*, which consists of formalising a general attitude, not established by an individual and auctorial figure or constitution, but established within a structured and open framework that provides the necessary processes for observing the phenomena inherent to contemporary transformations, in particular those that affect the conditions of textuality and are thus likely to open up the prospect of sophisticated constructive forecasts.

It determines according to the deciding principle that contemporary poetical search must be "connected" to all its surrounding forces: "*The only question asked when one writes is to which other machine can and must the literary machine be connected to in order to function*".[1] *The agence_d'écritureS®* represents this *node* of operative connections, capable of articulating the act of writing to all textual and extra-textual works that govern it and contributes to circulate them alternatively in return.

The establishment of *the agence_d'écritureS®* formalises the aesthetic position, according to which textual production does not only consist of creating the most complex syntactic constructions, but also of *contextualising* its principles of conception and development in relation to cultural, economical, technological and scientific environment – in short, developing a *systematic approach* to their functional and relational modalities. The enterprise aims to assess the interdependence between the general conditions of the transformation of our relationship with language and those that govern the progressive situation of the planet: "*A rhizome method can only analyse language by moving away to other dimensions and registers*".[2]

The *strategy's* priority central theme records the cultural fact of *knowledge mobility,* and calls for the training – according to the character of each separate project – of collaborative teams with multiple skills, capable of informing about the conditions of their conception and development better. Certainly, the principle does not aim to standardise ingenuities, it aims to *locate* them within proper areas of tension, with a view to encouraging productive articulatory circulations. The expertise called for may, according to each case, be composed of individuals or groups involved in research relating to textual fields: linguists, semioticians, archivists; or in more or less related areas of investigation: researchers from cognitive sciences, anthropologists, jurists, graphic designers, computer scientists; or even in fields of activity that are assumed to be exogenous to questions of language: architects, town planners, biologists, choreographers, composers, etc. For example, one of the issues consists of creating textual structures capable of taking into account the upheavals related to intellectual property, archiving, circulation, reading terms and conditions, etc., and which could still lay out these principles according to parameters particularly determined by all the assessments made during investigative cycles – in short, to widen the spectrum of analysis and intervention of practise to all *areas* that govern or surround it.

The principle of a union is deployed only according to the commitment within each particular enterprise. A flexible attitude characterises the extreme fluidity that determines the possibility and forming of connections operated on. By establishing a writing agency, I am placing the figure of the contemporary poet as an *expert* in the effects of text structuring and transformation, and more widely of language, capable of gathering, identifying, coordinating and *transforming* information by instituting a general and operative framework that calls for the multiple interplays of circulations between individual people and methodologies, within a *systematic approach* to the act of writing.

Poetic activity develops by the constitution of complex methods capable of conceiving studies that integrate the general environment and require principles of functionality that can determine the correspondences and interdependencies between the various forces present. Such an attitude is only possible through network methods; the agency will generate a dynamic plan of organisation corresponding to the nature of each individual project,

using methods that take into account all the parameters at issue. The formula is used to interweave different plans by overlapping and interlacing them, promoting the emergence of potentialities that no isolated parameter could cause.

Freed from the value of "talent" or subjective decision, the poetic act consists of evaluating the expertises to be called upon, coordinating them horizontally, in such a way as to connect them to internal areas in which analysis and intervention projects are deployed. It favours the idea of *program* to that of work and is primarily concerned with the complexity of its structural constitution and all the methodological incidences that it induces.

The projects formalise in multiple ways: spatialised textual devices; layouts of tensions between texts and images on web sites; collaborations with architectural and town planning teams*;* research and production mixed with advertising agencies and graphic designers with a view to developing the possible modes of text organisation and exposition – particularly in its relation to the icon – capable of dealing with the plural stratification of different *zones_de_langage*™; publications of current research, according to case, either on the net or through the issue of works published by the agency, and formalised according to the structuring corresponding to the nature of each project.

In my opinion, the demand to be part of the *logiques_circulatoires*™ (circulation scheme) authorises me to develop strictly individual poetry composition or theoretical corpus projects, using information from the research and production carried out by the agency. Through all its functional modalities, *the agence_d'écritureS*® forms a body of expertise for the contemporary situation of language and a cell of *multinodal & multimodal* intervention.

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THE REFASHION LAB:
BUILDING DIGITAL MATTER AND HYBRID SPACE

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Abstract:

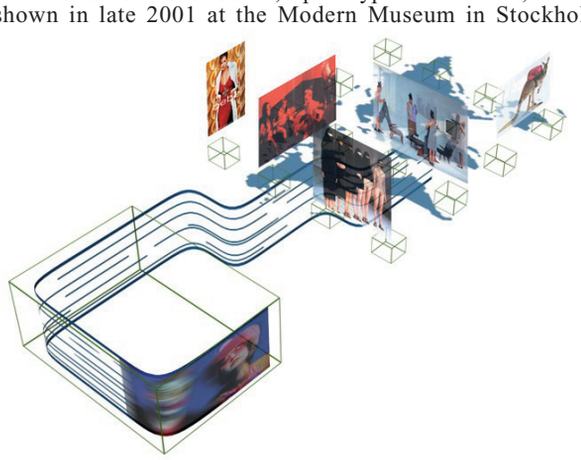
The exploration of architectural space, its conception and articulation is so far mostly modeled on a static understanding of structure and material, in relation to its inhabitation and use. Contemporary buildings are mostly frozen entities, enveloping organization and activities of its inhabitants through physical mass and form.

Interactive Media embedded in architectural settings can create new forms and organizations of mixed reality environments: enjoyment of the immediate physical nature of our built environments can be blended with the ephemeral nature of animated and interactive digital content.

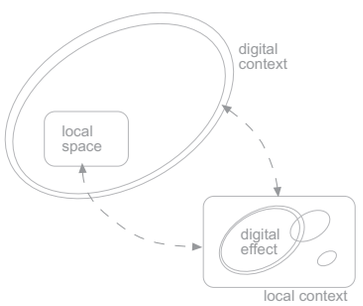
1. Introduction

The use of interactive media in architectural spaces, like exhibitions, museums and shops has created a certain conservatism in the application of digital tools. Visitor have grown used to devices, such as interactive kiosks or wearable CD guides in a museum, expecting media applications to be trapped in such awkward technical boxes. But how can we liberate the understanding of digital, interactive media as something, that does not, by default, have to inhabit those obvious devices and gadgets? How can we make media truly part of the environment, a natural part of the structure, organization and ambience of a physical place? For some time already, media has been discussed as a force in the background, that can surface and augment real life situations, a notion also known as ubiquitous computing.

But beyond emphasizing the technological value of ubiquitous, or pervasive computing, it is important to recognize its potential impact on design and media disciplines as well. The nature of interactive artifacts or environments that are created in this realm, are by definition a hybrid between tangible things and the effects of digital media converging in real life situations. In this paper I want to introduce the notion of a hybrid architectural fabric, a spatial structure that is a composite of physical architecture and the digital domain. We produced two projects that use similar means: the 'ReFashion Lab' (www.refashionlab.com) and a media enabled historic blast furnace hall in Avesta / Sweden (www.tii.se/avesta). To illustrate the thoughts in this paper, I will focus on the 'ReFashion Lab', a prototype fashion store, that was shown in late 2001 at the Modern Museum in Stockholm.



1.1 converging media and physical organisations



1.2 locating the physical space within a digital context

2. The ReFashion Lab

In the ReFashion Lab we are showing a new hybrid understanding of architectural space, one that is composed not just of physical structure. The underlying digital infrastructure becomes an integral, but invisible part of the spatial structure, organization and form. The ReFashion Lab is an interactive, media enabled fashion store that experiments with these new possibilities. The project was conceived as a conceptual and technological platform, joining artists, designers and engineers in the effort.

The space was modeled on known typologies found in retailing, like the shop window, changing room or probing mirrors. Visitors could therefore assume a natural role in exploring the space. But we also introduced some alien features, inviting an artist to play with the same infrastructure, using the interactive space as a kind of new canvas. Before describing two sample scenarios from the installation, the technological basis should be explained.

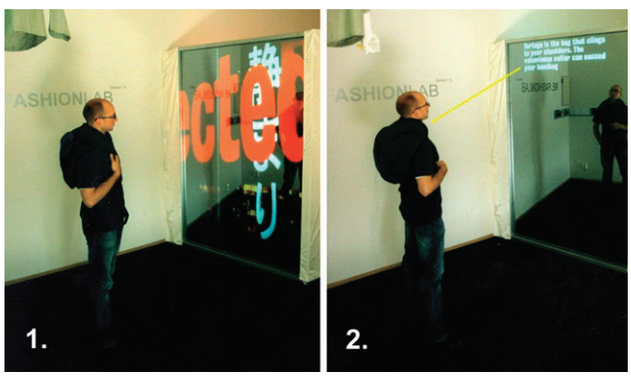
The infrastructure

The technical basis for this kind of media enabled environment is an invisible electronic infrastructure that maps onto the actual physical space. It features a standard Ethernet network, a server, sensors and output devices. Visitors are tagged with discreet radio frequency chips, which are worked into the fashion items. This allows the system behind the space to track the items, and therefore also the visitor's movement and actions. The sensors, or antennae for the chips are invisibly distributed throughout the space, corresponding to the active zones in the fashion store. This could be described as a spatially distributed interface, or 'interspace', reacting on the visitor with a number of different output media that are controlled by a central server. Media types can include audio-visual events, but also actuators that control spotlights or even kinetic events. Media content and interactive instructions can now be associated to single fashion items, creating a hybrid between physical artifact, media content and surrounding space.

Crucially, the tagged item carried into the space, and relating to the electronic infrastructure can support a great deal of totally different scenarios and applications. And this makes it a great design challenge, to think as much about the physical setting and the media content, and not just about the technology for its own sake. Since all three areas, namely design, media and technology have to be conceptually, functionally and formally integrated, the production of this kind of project has to be pursued within a true inter-disciplinary mindset.

3. Sample one: The MetaMirror

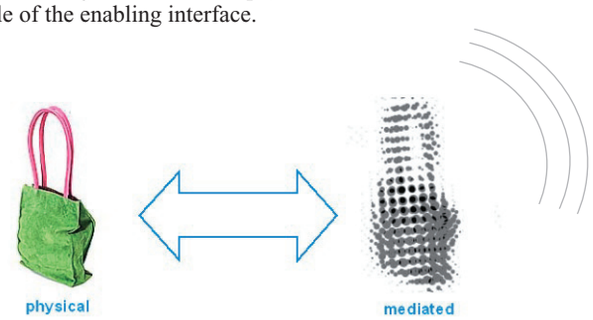
The MetaMirror is one of several distinct active zones in the ReFashion Lab. It is a hybrid between animated wall, mirror and information device. It is part of the architecture, relating in scale to the room and the visitor. In its idle state, a large animation is back-projected on it's surface, that was produced by Tomato Interactive in London. The scale of the installation makes it act like an animated wallpaper, continuously changing the ambience, light and feel of the space. Played with movie clips, it offers a space for artistic expression. But it can just as well act as a large, animated information billboard.



3.1 personalised event when the MetaMirror is approached

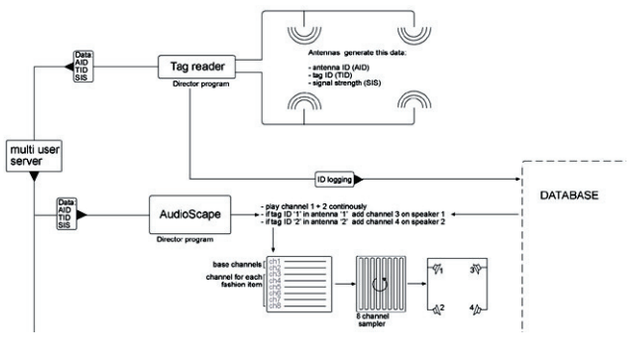
Once a visitor is approaching the large and animated display, the antenna behind the installation registers the item he or she is wearing. Now the actual interactive event can be unleashed. In the case of the MetaMirror we used a special semi-transparent mirror, which can act both as a normal mirror, as well as back-projected display. When the visitor's fashion item is detected , the display is fading from animation mode to mirror information mode. Above the persons reflection, on top of the panel, a message of information appears, one that specifically relates to the fashion item and visitor. The code of the tag is send to the server to source the information from the network in realtime. The visitor's reflection of photons in the mirror is overlaid with a reflection of digital content, relating to the hybrid artifact he or she is wearing.

Thus the link of ephemeral media, the space and physical object is creating a new conceptual entity, that is by definition hybrid in nature. This kind of hybrid entity is inhabiting the physical and the digital domain at the same time, challenging notions of physical presence, ownership and time. Physical matter and digital bytes are converging into new cultural products. Body and information are forming new relationships, while the environment takes the role of the enabling interface.



4. Sample two: The AudioScape

AudioScape is showing how the notion of music, interactivity and space can be reinvented. Layers of a specially composed music piece are playing, depending on the presence and movement of visitors in their specific fashion items around the active zones. Each fashion item has a unique sequence of sounds associated to it, in the form of digital files. Those files can be played back over a speaker that corresponds to the position of the visitor. With four active zones for the AudioScape, the movement of different visitors is creating a synchronized and spatial acoustic experience, that is unique at each moment in time. The interactive ambience of the space is thus mysteriously changing and adopting to the unfolding social situation.



4.1 information architecture for the AudioScape

AudioScape is using the same underlying infrastructure of antennae as the MetaMirror, but it is occupying a different experiential territory. The artist Scanner contributed the sound composition that was used to augment the fashion items. The fashion piece as a hybrid entity in this case, is producing ambience and entertainment, rather than a specific information event.

5. Reflections

These examples are showing two very different ways of utilising the interactive potential of the system. One is direct and informative, addressing the person in the interactive space. The other is ambient and evocative, but still reacting to the visitors inhabitation of the space.

The issue of interaction design is part of the larger design challenge. It is a complex cognitive issue , to make the linking of the information and effects with the physical artifacts obvious to the visitor. Since the common interaction metaphors, such as buttons or touch screens are deliberately excluded, the user will not react to such an environment with the usual technology expectations, like towards an interactive gadget or device. Much more the installations are experimenting with a new thinking, that the interactive experience is part of the natural exploration of the physical place.

6. Speculations

This hybrid environment is stretching through the immediate physical, as well as the digital domain. The conceptualization and production of these interactive spaces requires new modes of interdisciplinary thinking and practice. The organizational, material and formal quality of the space is extended or augmented; not creating multimedia- , but multi-sensual interactive spaces.

The organization and use of space is commonly described as the 'architectural program', the challenge now is to converge the space, media and information technology into a new hybrid design of real life build designs.

At last, Architecture will be truly coded.

ETHICS AND PRAGMATISM: TECHNOLOGY, CONTEXT, AND COLLABORATION IN PUBLIC ART

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Abstract

As social systems evolve through networks of exchange and economies of relation the relevance of Art is increasingly dependent upon divesting its traditions of authorship. Artists concerned with the social and political function of art practice, those, who wish to ethically engage the complexity of social life, are developing new methodologies. These include, re-inventing ethnographic practices, employing models of complex systems, and exploiting information technologies. Information space is public space. Advanced communications technologies required to enter and act in that space can be made accessible and empowering to individuals who currently have no access or power through public art practice. Interface design in art practice, consumer media, and information culture position the subject on a sliding scale of political power between consumerism and collaboration. The one-way vector of communication between artist and audience can give way to "context-dependent" practices in which the artist generates a framework for collaboration with an "audience," that is meaningful relative to the audience's social environment. This approach to public art avoids representation and appropriation, and provide material contexts for direct political action. Its goal is to open dialogue within and between communities, facilitate productive self-expression, increase political awareness, and challenge social codes. This paper will examine the potential of "context-dependent" public art practices through a discussion of projects which use social strategies for the deployment of technology in an attempt to change the conditions of disenfranchised or marginalized communities.

"Interactivity is the biggest lie of all!"
Blam!3

In his online essay "Strategies of Interactivity" Dieter Daniels enlists John Cage (one of this author's philosophical heroes) and Bill Gates (thought by some to embody the anti-Christ) as representatives, respectively, of "open" and "closed" systems. This rather humorous comparison/contrast helps to foreground the serious social, economic and political implications around the distribution of authority in interface, software and systems design.

An interface is, to quote Webster, "A point at which independent systems or diverse groups interact". Within the social register the human computer interface can act as both a boundary and a bridge. My work as a public/net artist is a bridge building project -- an attempt at border crossing. The goals of this project include:

1) transferring the role of author and distributing authority over system design and/or self representation to collaborating communities and individuals…
2) addressing the special problems of communities with limited access to information technology and culture
3) building tools and transforming technologies for use by communities in their own empowering, authoring practices, in short, providing interfaces to agency.

Interface design in art practice, consumer media, and information culture position the subject on a sliding scale of political power. Media industry has rapidly and completely absorbed and co-opted the utopian vision of media-assisted interactivity in the service of that which it was supposed to overcome -- the hegemony of the media industry and the monolith of global information culture. In the cultural moment of globalized, distributed, information networks artists concerned with the social and political function of art practice, those who"... would wish to ethically engage the complexity of social life…"[i] are developing new methodologies, (De-)signing new interfaces, re-inventing ethnographic practices, employing models of complex systems. In what I call "context-dependent" public art practice the artist generates a framework for collaboration with an "audience," that is meaningful relative to the audience's social environment. In context-dependent art practice participants are engaged in a manner, which facilitates productive self-expression, increases social or political awareness, and challenges cultural codes. This form of "Public" Collaboration requires a commitment to exchange, communication, collaboration and mutuality, a recognition that productive and effective works of art are dependent upon relationships between people not the product of one individual, and a desire to function within the social fabric of the audience/participant's daily life.[ii] I will argue here that the ethical work of public art can be founded on respect for each individual participant's particular, subjective perspective and should support democratic individuality, not bourgeois individualism.

There are significant, political implications embedded in a shift in authorial perspective from 'audience-as-viewer' to 'audience-as-collaborator'. In his 1934 essay "The Author as Producer," Walter Benjamin challenges the artist to avoid colonizing, appropriation and (mis)representation, to change the technique of traditional artistic production, to become a revolutionary worker against bourgeois culture. For Benjamin the artist must not be a mere ideological patron to the community but must intervene, like a worker, in the "means of production." I share Benjamin's conclusion that what matters in art practice is not the "attitude" of a work of art to the "relations of production of its time" but what its"

position" is within them. Quoting Benjamin, "What matters, therefore, is the exemplary character of production, which is able first to induce other producers to produce, and second to put an improved apparatus at their disposal. And this apparatus is better the more consumers it is able to turn into producers -- that is, readers or spectator into collaborators…"[iii]. Information and communications technologies can be exploited and developed to this end. While digital technology makes a more balanced relation between maker and participant possible, real collaboration is often undermined by the authority of the artist, who retains control of the technology. The apparent autonomy given to a participating spectator is often a false front, simply a product of digital technology's ability to offer more varied, but still strictly controlled routes through a closed set of prescribed material."[iv]

When addressing the distribution of authority in software and systems design there is an important distinction to be made between "interactive" systems and "collaborative" systems. Inter-actor, participant, and collaborator are fundamentally different subject positions. "Interactive" systems often, either intentionally or thoughtlessly, obscure the "mapping" of input to system output. For example, many contemporary computer-based works rely on sensing technologies that "average" input like gesture or population density within a space. Such systems appropriate the body of the viewer, typically called the "user", to drive the system. The viewer is reduced to mass or velocity, or trajectory within a prescribed sensing field -- often with no opportunity to know how her presence has effected her environment and no means with which to learn the system in order to produce results based on her own, as opposed to the artist's, intentions. This sort of "interactive" system uses the "user." While this type of interaction may provide a pleasurable aesthetic experience it does not produce an empowered subject. The technology is essentially surveillance technology and the subject position produced is that of the surveilled -- subject to the authority, control and use of the system.

Such Surveillance and Remote sensing technologies are the same tools used to control border spaces. The National Institute of Justice JUSTNET Border Research and Technology Center,[v] "works with the Immigration and Naturalization Service, the U.S. Border Patrol, the U.S. Customs Service, the Office of National Drug Control Policy, the U.S. Attorney offices, and law enforcement agencies to "strengthen technology capabilities and awareness at the Nation's borders." The BRTC has recently developed methods for securing the storm drains in El Paso, Texas against illegal entry. These methods include video motion detection, micro-power range grated radar, sensors, cameras, and radio frequency link equipment. An impressive array of electronics for outfitting a drain pipe against the threat of trespass (and similar to technologies used for "interactive" spaces in both museum installations and the entertainment industry.) Does this type of electronic surveillance technology "increase awareness" at our national borders or in our cultural institutions? BRTC is building systems that will stop fleeing vehicles and is currently working on technology to detect the heartbeats of people concealed in vehicles or other containers. (Remote sensing for interdiction.) These are border technologies. The desire to create a remote sensor to detect the heartbeats of immigrant laborers packed into cargo vans and containers requires a particular set of political relations - an uneven distribution of power where use leads to abuse. How could this technology be productively re-purposed through art practice. How could it be used by those it is being used against? While the US/Mexico border is increasingly militarized and equipped with data gathering and remote sensing technologies for implementing the government's "war on drugs" and "war on terror" (both of which are essentially a single war of race and class) Enrique Morones, founder and director of the "Winter Stations" project, distributes weatherproof boxes stocked with blankets, food, emergency medical supplies and clothing to "aid stations" (poles topped with blinking lights) in the border mountains. "Winter Stations" is an effort to prevent hypothermia deaths among illegal immigrants crossing the border in difficult conditions. In the summer the project provides water in desert areas. INS agents are asked not to park near the aid stations so that they won't be seen as traps. According to Morones the stations are not contradictory to the INS mission of inscribing and protecting economic and political boundaries, the stations are merely intended to save lives. What might Enrique Morones accomplish with access to the technologies developed at the BRTC? I see “Winter Stations” as a public art project and wonder what artists engaged in technology-based and public art practices must do to end the separation between high tech development and political activism in art practice. Perhaps a further consideration of the ethics of interface design and the politics of technology development, technology transfer and technological appropriation or aestheticization among artists is warranted.

Certainly, an ethics of interface design is needed. At minimum, interfaces should allow participants to understand how a system maps their input to its own output. The transparency of Input to Output, the accessibility of control parameters and the balance of open-to-closed data/information structures are limitations imposed by a system that either establish or undermine the collaborative role of the audience and, thus, express the artist's authority. Mapping is the kernel of inter-subjective communication in system and interface design. Two philosophies of mapping are common in current technology based art practice. I will employ a musical metaphor and call these phrase-based and note-based. Phrase-based mapping is assumed to "reward" the user under all conditions. This philosophy is based on the premise that the system should respond with aesthetically pleasing (as defined by the artist/designer) output regardless of the level of understanding or virtuosity the "user" develops in relation to the system interface. Phrase-based systems privilege the aesthetic control of the author of the system and merely allow the "user" to trigger or reorganize already aesthetically viable and vetted content. Note-based systems allow the participant to develop her own content based on her own intentions within the limitations prescribed by the system and its interfaces. This approach expresses a much higher level of respect for the subjective-perspective of the participant and, to varying degrees, abandons traditions of authorship and aesthetic valuation. When note-based systems are designed either to "learn" from the interaction of participants, to allow participants to contribute data to the system, or to reconfigure the system-as-such, they become "collaborative" systems. Interactive systems address "users" or "consumers". "Collaborative" systems establish communities and create "citizens".

In her essay "Storytelling as a Nexus of Change in the Relationship between Gender and Technology: A Feminist Approach to Software Design."[vi] Justine Cassells proposes a

productive strategy that addresses this problem. In "Feminist Software Design" authority is distributed to collaborating participants by allowing most of the design and construction to be carried out by the participants rather than the designer. The role of author, and in some cases the role of system designer is given to the participant.

This is the strategy of my practice of designing collaborative systems -- systems in which participants are given a framework for building a database based on their own experiences and the tools for structuring and interpreting that data themselves. I am also involved in developing a general set of tools that I hope will help distribute authority by allowing most of the design and construction of systems and interfaces to be carried out by participant/collaborators. I am developing, for open source distribution, a server with a content management system and simple database-authoring tool. Customized extensions of the Content Management system with plug and play scripts - and an intuitive, automated database design tool will make it possible for participating collaborators, without programming, design, or system administration skills, to build their own databases and display their content dynamically, online. I am currently developing and testing this system with students at the University of California, Santa Cruz. With the help of an undergraduate computer-science student, John Jacobs, I have set up the Zope Content Management System and developed a web-based authoring interface for a MySQL database connected to the Zope server. The Database tool allows our arts students to design their own databases. Using the student projects as prototypes John has developed Zope DTML templates that allow our non-programmers to design interfaces which allow participants to contribute, search and display data dynamically. The long-term goal of this development project is to build a server and set of graphical authoring tools that can be offered, free of charge to enable communities and non-profit organizations to design and build their own self-representations and their own information systems in public, online environments. I consider this development and dissemination project a work of public.

Public art practice has always presented the problem of a colonizing or utopian approach.[vii] The ethical strategy of Collaborative Systems is neither utopian nor colonizing. This approach to public art practice avoids representation and appropriation, producing a context in which to imagine something "other" - not organized into a representation assumed to be true for any and all contexts. Public Art should fulfill the Brecht's goals for the epic theater, "… alienating the public, in an enduring manner, through thinking, from the conditions in which it lives.."[viii] While political and economic power are increasingly dependent upon access to and presence within the global information culture the voices of the culturally, economically, and technologically disenfranchised, are becoming less and less audible. This dangerous trend might be reversed if all communities of interest had the access and the ability to self-represent, publish and broadcast in information space. Public/Net/Media artists can become context providers, assisting communities, collecting their stories, soliciting their opinions on politics and social justice, and building the online archives and interfaces that will make this data available across social, cultural and economic boundaries. Context Provision is an exercise of agency, which can change the conditions of disenfranchised or marginalized communities.

As of 1998 at least one out of every 3 AIDS cases was directly related to injection drug use. There are an estimated 22,000 injection drug users in Oakland and Alameda County, California. A total of 37.8% of all AIDS cases in Alameda County are related to injection drug use. Needle exchange programs are a proven method of reducing needle-related HIV risk behaviors among injection drug users. In 1993 the Oakland City Council unanimously passed a resolution declaring Oakland a "City of Refuge" for needle exchange and declared an HIV public health state of emergency, which endorsed needle exchange.

Casa Segura/Safe House, an HIV prevention clinic and Needle Exchange program, is a community based organization that provides easily accessible services to promote health and stop the spread of HIV, Hepatitis C, and other drug related harm among people who use drugs, their families and communities. Casa Segura's prevention strategies revolve around a "come as you are" approach to healing and harm reduction. This approach is based on the belief that drug addicted people can help themselves live a positive more productive life-style if given the choice to change, the time, and the appropriate amount of support. Because Casa Segura provides needle exchange it is politically embattled and continuously attacked by its district city council representative and others interested in the "economic development" or gentrification of the Fruitvale neighborhood of Oakland, where it is located. Though critics claim that the needle exchange attracts drug dealers and users to the area, encourages drug use, and increases incidences of dealing and other related crimes, statistics show that this is not the case. The clinic actually serves the needs of all local residents. Needle Exchange and Harm Reduction clients at Casa Segura live in the neighborhood - some in housing and others in homeless camps or out of shopping carts. Undercutting services to the area's neediest citizens would disadvantage everyone. Casa Segura's clients are most at risk for Hepatitis C and HIV infection. By reducing this risk Casa Segura protects the health of the whole community. Many studies show that needle exchanges reduce HIV transmission and can serve as a bridge to drug treatment. They neither encourage drug use among program participants nor spread drug use throughout a community. The continuation and expansion of the existing needle exchange and harm reduction programs at Casa Segura is critical for the public health of Oakland. But, Casa Segura's existence is under current and constant threat. There can be no better example of this fact than the arson perpetrated against the SafeHouse on New Year's Eve in 2000. This horrible act of violence, thought by many to have been sanctioned, if not solicited, by the district city council representative, demonstrated how serious the misunderstanding is. Something must be done to foster communication between the SafeHouse community and its opponents.

Like The staff of Casa Segura, I believe that the pressure to move the needle exchange program out of the neighborhood is motivated, at least in part, by fear based on misinformation, disinformation and lack of communication. Together, we hope to establish an environment for dialogue and communication between Casa Segura and the community it is situated in order to develop community awareness and support for both the mission of Casa Segura and its methods. To this end I have initiated a collaboration with Casa Segura staff and clients to create a "distributed" work of public art --

safe house and its community and increase awareness and understanding of the crucial services offered there. The project, *Need_X_Change* is designed to help the staff and clients of Casa Segura attain social and political "voice", through dialogue with their local community and participation in the global information culture. Casa Segura's philosophy of "harm reduction" therapy and my own practice developing *Collaborative Systems* share a premise of respect for the "client" or "participant" and a recognition of the value and dignity of all individuals, their experiences and their perspectives.

The project which has been funded by the Creative Work fund, has three phases, Outreach, Voice and Education. A website and a series of billboards and bus boards will provide information about Casa Segura, its services, its staff and its clients, to the Fruitvale community. The website and public graphics will be created collaboratively by allowing staff and clients to tell their personal stories in their own words and participate in the visual design of the web-pages and billboards that disseminate their stories. The "voices" of the many individuals who both use and staff the center will be made "audible" to the public through the website and public graphics program. Each of these representations will be developed primarily from "first-person documentation." In order to collect this "first-person documentation" I am distributing inexpensive audio tape recorders and disposable cameras to selected Casa Segura Clients. These Clients are documenting their daily experience and taping their own stories in their own words. A small computer lab will be established at Casa Segura. The "lab" will provide an on-line authoring environment and training center for Casa Segura. Using this lab I will train participating clients in basic computer literacy and web publishing and engage staff and clients in a participatory design process. The "lab" will also provide e-mail and web access to Casa Segura clients. Basic computer literacy, e-mail and web access will assist clients in their efforts to find employment and or support services of various kinds.

I am currently working with Casa Segura clients on the development of their "first-person documentation." I meet with these extraordinary people during the Fruitvale Needle Exchange to discuss their progress and supply them with tapes and film. I have set up the project computer "lab" in Casa's administrative offices where I work, one on one, with participants to put their images, audio files and texts online. Most of the participants have never used a computer and, though they have heard about the Internet, have never been online.

Asked why people become injection drug users Rand Corporation Sociologist Ricky Bluthenthal, who has contributed to several studies of Oakland needle exchange sites, answers “For most folks it’s a pretty tortured path, and it certainly isn’t based on the fact that you have a program that’s taking used syringes from current users and replacing them with clean ones. I’d be interested to meet the person who said they started using because there was a needle exchange program in their neighborhood.” The Need_X_Change collaborative team wants the Fruitvale Community to “meet” the clients of Casa Segura. We believe that if Casa Segura clients’ stories can be heard then the community will no longer misunderstand or fear Casa Segura or the impact of its presence in the community. The program will initiate this “meeting” and encourage dialogue, which will lead to better understanding, empowering and "giving voice" to those concerned who currently have little power and no "voice".

In public art the artist must serve as an agent or operator, in Benjamin's terms, "not to report but to struggle; not to play the spectator but to intervene actively "[ix]. For example, "A-Portable," designed by Atelier Van Lieshout in collaboration with Dr. Rebecca Gompers, is a refurbished shipping container that functions as a mobile gynecological clinic. “A-Portable” was built so women from countries where abortion is illegal can terminate their pregnancies safely and legally in international waters. The text, which accompanied the exhibition of A-Portable at the Venice Biennale last year, begs the question of agency. *"To understand the work one must move from ontology, (what is art?) to pragmatism, (what can art do?). Herein lies a possible revival of avant-garde politics - no longer historically "ahead", nor operating through shock and estrangement, but rather producing works that make things possible right now..."*.[x] Instead of representing or illustrating the political issues they engage from a monolithic or uni-vocal perspective A-portable, and Need_X_Change, make possible new practical and political realities for the individuals and communities they engage. Each contribution that is made in through a Collaborative System interface is part of a conversation - a negotiation between individuals, and communities who are ready to take responsibility for representing their own subjective experience, social position and political perspectives. By engaging communities of interest who have limited access to information technology, and developing tools and interfaces specific to their needs, I hope to provide contexts for self-representation, communication, and education that will effect direct and substantive change in the political and material circumstances of their lives and the life of their communities. In the historical narrative of social and political systems local exchanges proliferate as global states - nothing is inevitable.

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[ix] In "The Author as Producer" Benjamin gives Sergei Tretiakov as an example of an "operating" writer who, "provides the most tangible example of the functional interdependency that always, and under all conditions, exists between the correct political tendency and progressive literary technique…Tretiakov distinguishes the operating from the informing writer. His mission is not to report but to struggle; not to play the spector but to intervene actively…" Benjamin, Walter. ""The Artist as Producer," In *Reflections*. ed. Peter Demetz, trans. Edmund Jephcott, New York: Harcourt Brace Jovanovih, 1978.

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GENERATIVE ART, Preludi, natural mirrors

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Abstract

Generative Art is Art, Science and Technology working together. This creative process produces an endless sequence of unique and complex events, as in nature. A new icona for this era. This Generative Idea is strongly recognizable through each CODE as natural mirrors.

1. New Nature and Generative Art

After two hundred years of the old industrial era of necessarily cloned objects, the one-of-a-kind object becomes an essential answer to the long-neglected human need to live a world in which each artificial object mirrors the uniqueness and unrepeatability of every person. In an epoch marked by repeated attempts at the cloning of natural beings, Art returns in advanced technological fields such as non-linear dynamic systems to the notions of artificial life and artificial intelligence, the aesthetic and ethical pleasure of rediscovering the processes and characters of nature.

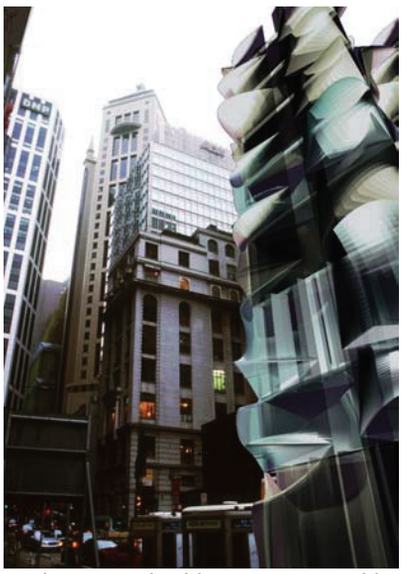
Generative Art is the idea realized as genetic code of artificial objects. The generative project is a concept-software that works producing three-dimensional unique and non-repeatable events as possible and manifold expressions of the generating idea identified by the designer as a subjective proposal of a possible world. This Idea / human creative act renders explicit and realizes an unpredictable, amazing and endless expansion of human creativity. Computers are simply the tools for its storage in memory and execution, but they are necessary to reach and manage complex not-linear systems.

This approach opens a new era in Art, design and industrial production: the challenge of a new "naturalness" of the industrial object as a unique and unrepeatable event, mirror of the uniqueness and unrepeatability of man and nature. Once more man emulates nature, as in the act of making Art.

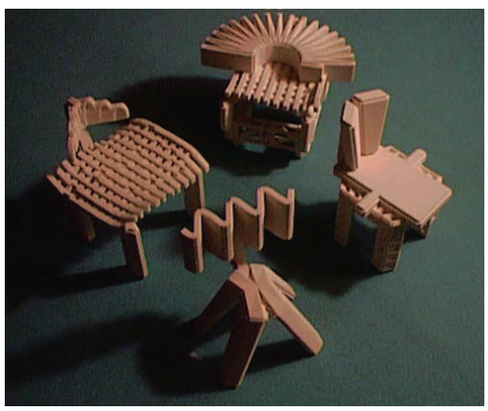
Argenìa is the term that we have coined for this genetic code of artificial ware that, like DNA in nature, identifies not only an object but a species of objects. Industrial design will no longer be the idea and realization of an object, but the idea of a species of objects and its industrial intelligent generation.

The three-dimensional models produced using Argenìa soft, multiple results of the idea, can be directly utilized by industrial

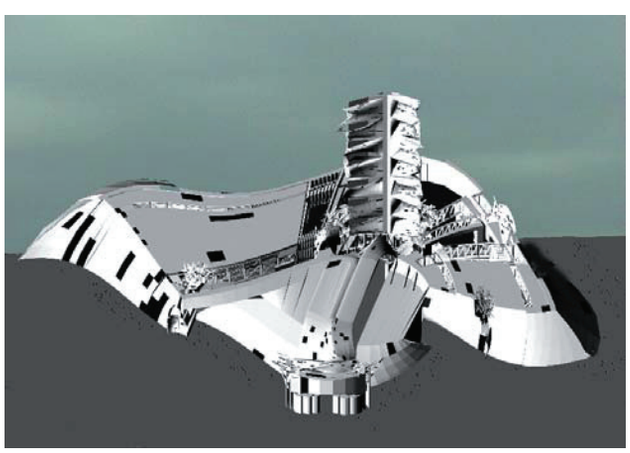
Fig. 1 - Sequence of generated skyscrapers in Hong Kong waterfront, C.Soddu, Feb. 2002, www.celestinosoddu.com



manufacturing equipment like numerically controlled machines and robots, which already represent the present technologies of industrial production. This "generative and automatic reprogramming device of robots" (Fig.6) makes it possible to produce unique objects with the same equipment and with costs comparable to those of objects that are identical; like a printer that can produce pages that are all the same or all different, at precisely the same cost.



Designing this artificial genetic code was an enthusiastically creative operation. We have found ourself returning to the Renaissance cultural approach, capable of combining science and art. We have created ideas formulating a code of the harmony that, as it is born of the history of man and his relationship with nature, identifies and represents our subjective vision of the possible, the imprinting as a designer. The code of harmony, like all codes, contains some rules that trace certain forms of behavior. Therefore it is not a sequence, a database of events, of forms, but a definition of behavior patterns: the transformations from what exists to the complexity of contemporary objects in a state of becoming. The design act changes from forming to transforming, because each form is only one of possible parallel results of an idea.



2. Generative Art and Design, the logical approach.

Two are the most important topics in designing this Argenìas: the complexity and the relationship between species and individual. To manage the complexity we referred to the concept that the complexity is not generable ex novo, but only using a process to stratify sense into a flowing simulation of a temporal irreversible path. We can activate and control this stratification if we design a system with a self-organizing paradigm that can increase its identity and recognizability during the simulated time flowing.

To built this paradigm we referred to the chaotic dynamic systems that are suitable to be controlled by algorithms, even if they never produce the same event. We have used a fractal but non deterministic logical frame. In other terms, every decision cycle has inside, nidified using a lot of other cycles, other decisions, and so on. The structure of these cycles is, as in fractal objects, always the same. The differences and the unpredictability born from the resonance with other cycles, from the time of activation and from always different flow of information.

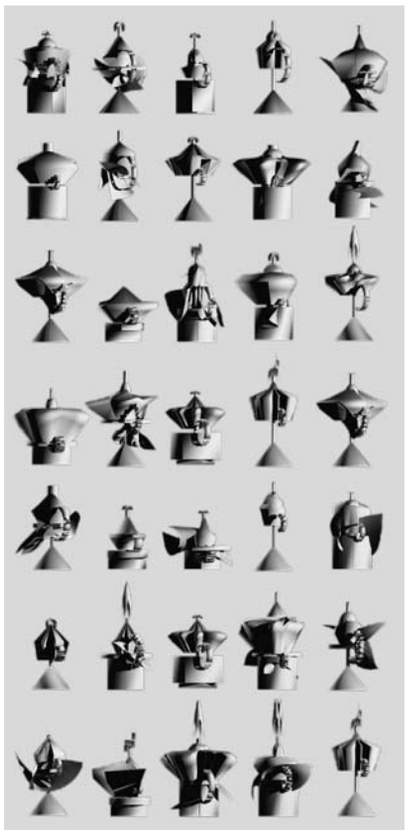


Fig.2 Generated Architecture in Hong Kong, C.Soddu 2002
Fig.3 Generated Architecture project of a commercial center in Italy, C.Soddu 2001. www.celestinosoddu.com
Fig.5 Generated series of different coffee-pots, C.Soddu 2002
Fig.6 Chairs realized by Soddu's Generative Project that directly generates and sends stl files to rapid prototyping machine. www.generativedesign.com - www.soddu.it

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Wonderland in Pocket

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ABSTRACT
M-Views is an experimental video story-making and sharing system designed for distribution to mobile hand-held video-capable devices. Video stories are constructed using the M-Views authoring tool, which allows makers to preview how segments will be sequenced based on any possible navigation path of the viewer. Inspired by environmental artworks and multiple perspective films, narratives designed for the M-Views system tend to incorporate the opportunity for the story to merge with the architectural surroundings and, in the future, with the activity of the participant. As we explore the mobile story form of the future, the following questions guide our inquiry: What story structures/gaming strategies most actively engage the audience as a participant in location-based video drama? Given a few prototypes and a network, will a community of makers emerge who want to develop this genre of video art? What special tools does the mobile story-maker/artist need to create engaging location-based cinema? In this paper, we describe the M-Views platform and our experience in two experimental story productions.

INTRODUCTION
Ever since its invention, cinema has been expanding to make use of smaller, more accessible, consumer oriented technologies. Today, video cameras and video displays are increasingly incorporated into portable/mobile electronic devices such as cell phones and PDAs. As it becomes possible to receive cinema as part of one's everyday activities, we ask how mobile cinema will transform traditional models of cinema and television.

Whether projected through celluloid or transmitted using analog or digital encoding schemes over broadband networks, cinema and television are modeled on delivery of a more-or-less immutable image stream that will be viewed continuously, almost irrespective of context. In contrast, digital video provides a database model for cinema in which short sequences are stored and served according to some programmable criteria; often this selection makes use of contextual data to support personalization. When we incorporate the location of the mobile client as context, cinema is transformed from a continuous 3rd person experience into a discontinuous 1st person experience in which the story is augmented by the architectural surroundings.

How will this location-aware delivery of movie elements to the viewer as they navigate space transform the cinematic story form? Depending on the design of video content and service, the participant may merely experience an augmentation of the world they are navigating or they may become immersed in active role-playing. This role-playing may be directed or non-directed but will require the audience to step into what appears to be some form of public street theater. Increasingly, these experiences will invite participation by the consuming audience, either as players in a completed story or as messengers and game-masters who are able to alter the experience in which the players are immersed on-the-fly.

The M-Views research project explores ideas, methods, and culture that may affect the experience and creation of mobile cinema. A specific goal of the research is to provide a mobile tool kit that can support widespread creative adoption of mobile story construction. This paper presents initial progress and results.

BACKGROUND AND RELATED RESEARCH
Some clues about the future of mobile cinema can be derived from role-playing games and from Janet Cardiff's work "Video Walk," [7] which premiered at the "010101: Art in Technological Times" exhibit at San Francisco Museum of Modern Art in 2001.

Role-playing games come in a variety of flavors but generally they involve the design of the story circumstance and a set of characters with pre-assigned goals, personality traits, and resources. Individual participants are assigned particular roles; often they design their own costume. Action plays out over the course of some specified time in an improvisational fashion. Often a "game master" (sometimes also the designer) is able to guide the action in certain directions by releasing new resources or circulating anonymous messages during game play.

In Janet Cardiff's "Video Walk", museum visitors were invited to pick up a video camera and actively follow a cinematic scenario as it was shot throughout the museum space. In this work, the spatial perspective in the cinematic action is closely akin to the spatial perspective of the world that is being navigated by the viewer. The déjà vu confusion that results from trying to match the virtual images to the real word provides an unsettling handle to the viewer's own life. Cardiff said, "You forget which is the real thing – because the video image is aligned with where you're walking. It has a weird psychological effect on the brain." In the case of Cardiff's work, the audience had the sense that they were controlling their passage through the experience. The explicit and continuous architectural connection between the virtual and the real provides one touchstone for the construction of mobile cinema.

For two decades, the Interactive Cinema group has focused on exploring emerging story forms and technologies for delivering personalized cinema. Recently Flavia Sparacino developed a museum wearable; her "storychastics" [11] approach incorporates predictive modeling of the visitor experience to deliver personalized exhibit information. Barbara Barry's current work applies common sense reasoning to story decisions that will be made by amateur videographers equipped with wearable cameras. Kevin Brooks' [8] PhD work, "Agent Stories," demonstrates how we might incorporate story knowledge in order to orchestrate a multi-point-of-view drama. In 1996, Micheal Murtaugh's Contour showed how a spreading activation network could provide associative continuity to an individual navigating a large cinematic database system, [5]. These research projects have been particularly helpful in understanding the challenges and opportunity inherent in a database story model; this understanding can now be applied to mobile cinema.

In addition, research projects which focus on developing intelligent context-aware systems for mobile applications such as Shopping Assistant [1], Cyberguide [4], Adaptive GSM phone and PDA [2], Augmented Reality [3], Fieldwork [6], and Location-aware Information Delivery [9], provide us with perspectives concerning technological design and user studies.

THE M-VIEWS TOOL KIT

The adoption of mobile cinema requires a pocket-sized platform that knows where it is located and that can (minimally) receive video and send text messages. Further, if mobile cinema is to become a dominant form, makers will require a tool-kit that supports their ability to conceive, build, and produce a mobile cinematic story with a minimum of engineering overhead.

As a first level enabler, the M-Views project has implemented such a client-server delivery platform and production tool-kit. Implemented on a Compaq iPAQ with GPS and 802.11 connectivity, the M-Views client is location–aware and multimedia capable. A robust instant messaging tool has been built into the client software to allow viewers to leave messages for other in time, space, or under certain variable conditions according to the story.

Figure 1 M-Views Client

The M-Views Server is built from Java Servlets that maintain an XML database of video sequences, message events with delivery guaranteed, as well as web-based administration. The API is freely available so that anyone can develop new clients, authoring tools, and content with ease.

Finally, M-Studio, [10] provides a PC-based multimedia-authoring tool for designing, editing and examining context-aware stories that are viewed in mobile environments. M-Studio allows authors to develop multi-threaded stories that unfold in time and space. Authors can enter scenes into storylines and associate them with a location. Additional context information and rules pertaining to story structure can be added as they are needed. The authors can use the simulation tool to debug the story by playing back the content as it would be received when a user follows a particular path. When the author is satisfied with the content play-out, M-Studio can create an XML story script that is uploaded to the server along with the video content, making the story available for viewing on a client iPAQ.

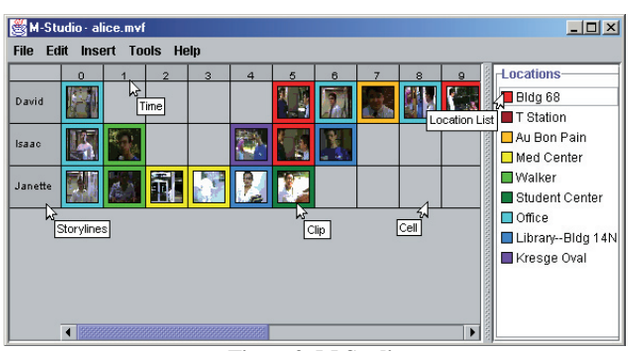

Figure 2: M-Studio

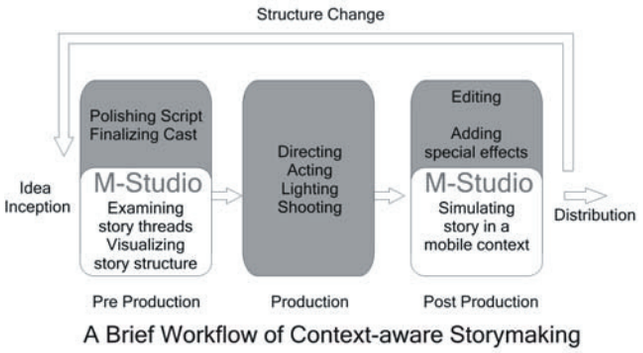

Figure 3

M-VIEWS PRODUCTIONS

A critical aspect of our research is to understand how best to shape story content for mobile, context-aware systems. Will the story receivers actively embrace a player role? How can we best use architectural space and time to augment the receiving experience? Will the mobile story channel prove inspirational and actively engage a broad range of people to make their own productions? To help explore this question, we invited undergraduate UROPs (Undergraduate Research Opportunity Program) to join us in creating video content for the platform.

We use a collaborative brainstorming and improvisational theatrical approach to the story development. In the paragraphs that follow, we describe three production ideas, two of which have been or are in the process of being implemented.

When we were first developing the M-Views system, we had the idea that, given a mobile client, story makers would like to produce and embed a video sequences in a particular place.

These sequences would then be picked up at a designated time by someone known or unknown to the author. These segments did not need to be part of a larger drama; rather they could be poetic in nature, rather like postcards that make a single unique connection between the place, the sender and the receiver.

In addition to location, context-aware in this example might reflect time of day or a more personal level of arousal. We developed a short scenario around this concept: Gill goes to Au Bon Pain for lunch at around 3pm; while there, she notices that a new video message has appeared in her email in box. She plays the scene which includes a dialog about a secret object. The segment was recorded at Au Bon Pain around 3PM; the dialog allows us to guess that the segment was filmed the day before. Although we never implemented this application, we hypothesized that it would be most compelling when the particular receiver felt that the movie was destined just for her.

As we continued to brainstorm, two of our UROP students who were most committed to the M-Views production suggested that they would like to develop a “who-dun-it” story. They effectively argued that with a “who-dun-it” structure, they could assign the viewer the role of the investigator. The product of this idea, "Another Alice," was completed in 2001.

In this story, which takes place on the MIT Campus, the participant meets various characters who reveal aspects of the situation and suggest where they are off to next. These clues invite the participant to follow the story by following particular characters across campus. The story experience varies based on the actions of the participant.

In this production, the M-Views client uses GPS information to track the location of the participant across the MIT campus. Location information plus time are used to trigger the playback of particular story segments.

The complexity of this story, with three main characters and four different possible endings, inspired the creation of M-Studio, a pre-visualization and simulation tool that allows authors to view the sequential play out of a story, given any path the viewer could possibly take.

Figure 4: Screen Shots from Current Production

A few dozen people have now experienced this movie with mixed results. Most people have no trouble getting a feel for the form and following the characters. However, many people want to run other applications on their iPAQ, so they have expressed a preference to have the movie segments come into the hand held as an email attachment. Almost all viewers asked when the platform would allow multiple people to engage in a story. Finally, many people suggested that the story would be better if more interactive message exchanging could take place.

In early summer 2002, we began to brainstorm a new production. We decided for practical reasons (closeness to the lab and the availability of the 802.11 network that spans the campus) that we would once again locate the production on campus. First principles for this production include that the project should appeal to almost anyone – parents, academic visitors, locals - who visits the campus. In addition, the project should have an evolving structure so that new story makers can easily add segments time and so that the data base of segments could grow quite large. The core vision for this project was a story web that could offer the magic of a "son-et-lumiere," and bringing people into the life of the campus.

While none of the UROPs working on this project had much experience making video, three of the four of them have had some theatrical training. Their experience with drama made them enthusiastic about taking a dramatic rather than a documentary approach to the problem of shaping a story. From the beginning we needed to understand how a story could be both dramatic and evolving? We agreed that each UROP should develop a character – a student with a past difficulty, a future goal and a present state. They were to determine what this student was doing around 8AM and again at 8PM. A few scenes in the life of these students would provide the basics for the story web. Following the taping of the initial scenes, we would develop a range of scenes that drop the viewer into the past or that launch them into the future. This story will be run for the first time this fall.

CONCLUSIONS

While multi-threaded stories for 'interactive' entertainment have been envisioned over the over the past quarter-century, and many prototypes have been created, we are still in the early days of developing compelling forms. Game scenarios, documentary portraits of place, and poetic exchange are all candidates for context aware storytelling. Wireless handheld computers that display video offer us a novel and exciting opportunity to create a mobile movie form that will provide a fun, compelling, and entertaining experience.

We believe that the mobile channel as it is now emerging could be the channel for a new cinema. The developments above explore some of the opportunities and challenges for this new cinema. By incorporating client mobility, our movie sequences find you as you navigate space. The story web concept provides an extensible structure. Today UROPs are engaged in a sociable collaboration as they make new content.

ACKNOWLEDGMENTS

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Metaphors in the Mix

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Abstract

Augmented Reality represents a collision of universes, between that of physical experience and the universe of symbols and meaning. Our passage back and forth between realities long predates our use of computers, and our attempts to separate the real from the virtual. Mixed and augmented reality offers the media artist rich territories for exploration wherever meaning migrates between the experiential and the symbolic. The authors' works in progress investigate both the practical application of mixed reality as an educational tool, and the aesthetic potential of the technology itself.

1. Introduction

Augmented reality provides a place that sits somewhere between the physical world of everyday experience and the virtual world of the computer. The technologies involved in augmented reality vary a great deal in sophistication and expense, but they all use elements and landmarks in the real world as pointers to elements in the virtual world and vice-versa. For example, I might focus my attention on a particular building in the real world, and also be presented with information about its functions, floor plans etc. in my visual display goggles. Conversely, objects in the virtual space may direct me to other buildings in the real world and provide maps of how to get there.

2. Real and Virtual

Defining the real and the virtual as being exclusive of each other, places limits on the ways we might conceive of and use augmented reality. Augmented reality is, after all, as much an attitude to technology as it is a technology itself. Unlike immersive virtual reality, augmented reality applications typically do not seek to immerse the participant in a completely different world. Rather, they seek to illuminate aspects of the real world with extra information from the virtual world. Mixed reality is another term used interchangeably with augmented reality. More strictly applied, mixed reality might imply a more balanced relationship between the real and the virtual, however, for the purpose of this writing, the two terms will mean much the same thing. In a mixed reality environment, an object can often have both real and virtual components. The real part is often the part that we can actually locate and manipulate in the physical world. This physical object usually also incorporates some means by which the computer can also locate it and attach its computer-generated or virtual components. In this way, the virtual part of the object borrows credibility from the weight and tangibility of the real part of the object.

It is also a mistake to assume that the 'virtual' must always take place inside the computer. We have dealt with abstract spaces and representations as tools for dealing with the world for a lot longer than we have had computers. The ability to mentally model situations in order to understand or make predictions is a basic human quality. In a sense, we often inhabit our simulated versions of the real world a lot more than we care to imagine (we even construct imaginary versions of other people and have lengthy conversations with them in their absence). A large portion of our waking and dreaming life is spent interacting with 'virtual' environments and characters without even turning on a computer. From the moment we began to use symbols and representations, we became enmeshed in the virtual. Conversely, physical objects frequently function as symbols or as anchors for our thoughts. In my garden here in Japan, my wife recently planted an Australian eucalypt tree that she bought for my birthday. When I look at this tree, I am amazed by the layers of meaning and significance that I readily attach to it. In this sense, the real world is never completely real. Objects in the real world quickly become objects of meaning.

3. Other Aesthetic Implications

Through our technologies we se and hear things that are removed in space and time. We are aware that a degree of deterioration and filtering of the information must be taking place. However, so-called Machine vision technologies not only transmit visual information but also actively interpret this information on our behalf. What we receive is a re-interpreted version of reality made real by our trust in the mechanisms of mediation. In the case of camera-based augmented reality systems such as the ones we are using, the viewer and the computer both see and interpret what is in their shared field of vision. The viewer must then interpret the computer's interpretation of the scene in order to construct his or her internal picture of what is real or meaningful. This means that the human and the computer may cooperatively negotiate a shared view of reality.

4. Music and Mixed Reality

In music, a variety of abstract representations are used to conceive of and manipulate musical structure. At ATR Media Information Science Laboratories, we are engaged in several projects that explore ways of representing music as an interactive space. The primary objective is to provide a way of playing within the abstract space of the music allowing an intuitive understanding to inform the learning and creation of music. In developing and refining these systems, I also hope to pave the way for several new media artworks that deal with what I see as a

collision of universes, between the experiential world and the world of symbols.

The particular form of mixed reality technology we are working with is what is known as a *camera see-though* system. Our systems are based on the Augmented Reality Toolkit a set of programming libraries developed by Hirokazu Kato of Hiroshima University and maintained by a number of people associated with the Human Interface Technology Laboratory at University of Washington[1]. A camera is mounted on a set of video glasses. This allows the user to see whatever is normally blocked out by the act of wearing the glasses. This comically redundant arrangement actually enables the blending of realities to take place. The computer is trained to recognize certain marker patterns together with their position, distance and orientation in relation to the camera. This information allows the computer to superimpose a computer-generated 3D image at the precise location of the marker. When the marker is moved, the computer can accurately track it and re-position the 3D model. If you hold a marked card on your hand, you can see a dancing pixie (or whatever the computer has placed there) and turn it around to see the other side etc., as long as the marker pattern is still visible to the computer.

5. The Augmented Composer

The Augmented Composer[2] is a system that allows a user to create and manipulate musical phrases by arranging a set of marked cards on a tabletop. The placement of cards from let to right determines the order in which the notes are played while their location toward and away from the user governs which actual note is to be played. Various modifier cards can be used to change the accent and duration of each note and to save the completed phrase onto a special phrase card. The phrase cards can then be combined to make larger musical structures. The notes themselves are represented graphically as animated toy snakes that get longer and shorter depending on the length of the notes. The system is intended as a place where real musical objects can be moved around and where musical structure can be experienced as a physical space.

Figure 1. The Augmented Composer

6. The Book of Mirrors

In parallel to the more education-oriented projects, we are also developing a series of artworks intended to explore the significance and potentials of augmented reality. “The Book of Mirrors” is an imaginary book concerning people’s use of symbols and representation. It comes from the time of China’s yellow emperor who, through powerful magic, ended a war between our world and the world beyond the mirror. The mirrors were frozen solid so nobody could pass through, and the mirror people were robbed of their forms and forced to copy our appearance and movement. We now live in the time, foretold by the yellow emperor, when the magic loses its power, and the mirror world begins to free itself from its prison. The narrative unfolds as the visitor manipulates a set of large markers in front of a large display screen. Different episodes and versions of the work may involve head-mounted displays as well. The figure shows a scene from “The Elements”, a kind of alchemical primer and prelude to “The Book of Mirrors”. The five elements are arranged and combined to make elemental beasts and control a shifting sound-scape.

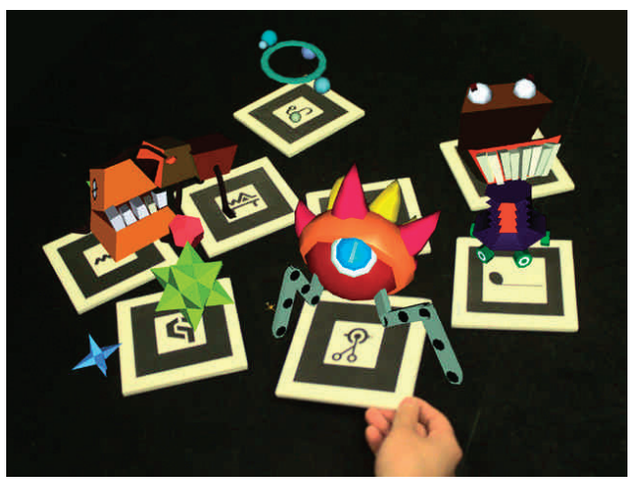

Figure 2. "The Elements" from "The Book of Mirrors"

7. Conclusions

Augmented and mixed realities provide a fertile ground for artistic exploration. The potential for migration of meaning between the world of experience and the world of symbols and representation opens up a wealth of avenues for the artist. In my own work I plan to divide my efforts between the development of a functional creative tool for young people, and a more large-scale, open-ended work dealing with the issues raised by the technology itself. Later episodes of “The Book of Mirrors” will focus on tensions between the participant’s and the computer’s interpretation of the visual symbols.

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The Ontological Meaning of Musical Interactivity
----- towards the aesthetic research of the musical interactive art

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Abstract

This paper discusses about the musical interactivity that is realized through the music descriptive language and the virtual musical instrument. The discussion has the structural and the ontological framework for musical piece. Three types of musical interactivity are noted: compositional-type, ensemble-type and mediating-type.

1. Theme

This paper aims at finding out the axis to discuss the musical interactivity. Musical interactivity is here defined as interactivity that serves for musical act (composing, performing, hearing, experiencing and so on), and which is realized by newly born digital technology.

2. Fundamentals of Discussion

The musical interactivity which is defined both from musical act and from technology is one of the information processing situation, in which some human acts are (both physically and mentally/intellectually) exchanged for another sequences of information which have the different meaning and context from those of the original acts. What occurs to music structurally and ontologically?

The modern concept of musical act like composing, performing, hearing has been formed in Europe since 14-15th century, which has been based on the musical practice. In the late renaissance and the early baroque era, composing was clearly conceived an independent act of performing and the musical practice has the unique form that is independent of the other social practice and the another art practice. *Musique pour musique* is supported by the modern musical practice that is ontologically realized by composing, performing and hearing, that is, objective and theoretical music structure gets ontological meaning by way of human musical acts.

I try to discuss here the drastic change of the ontological situation that has occurred to the traditional musical practice. The ontological change has a close relationship to the technological tools including the new instruments and the music descriptive software. And we can see that relationship in the musical interactivity.

2.1 Structure of Music ~~~ musical pieces as individual entity

Traditionally each musical piece has structure. One structure is based on the functional harmony, and another structure is based on pitch-set relationships as in the pieces of the atonal works by the second Viennese school, and the other is based on some statistic sound diffusion design as in Xenakis' works, structural levels in the Schenkerian sense and so on.

This is the first structure, structure in the sense of music theory.

Meanwhile, in some fields as Music IR or computer music science the structural phases of music are discussed, which made it possible to categorize the musical interactivity from another points of view; sound material, body sensing, human communication etc. Or, as is presented in the division of Ircam software, we can indicate five structural categories; sound processing, CAC, real-time interaction, spatializer, gesture-sound interaction.

This is the second structure, structure in the information processing type.

In the case that one piece which uses body sensing technology and gesture-sound-interaction application is the research object, the second structure is clear because of the technological situation, but the first structure should be discussed in the historical context of the contemporary music. What is the tone-structure? How is the synaesthetic relation between staging design or gestural design and the sound?

2.2 Ontological Levels of Music ~~~ musical pieces which are produced and received by human beings

I discussed about the structure of musical interactive art in the 15th International Congress of Aesthetics (2001),. <Musical interactive art> is *music* in the sense that the piece is compound of the results of composing, performing and hearing, and that is *interactive* because the piece has some phases of interaction in various levels. I presented three ontological levels of interactivity, each of which effects on composition, performing and hearing.

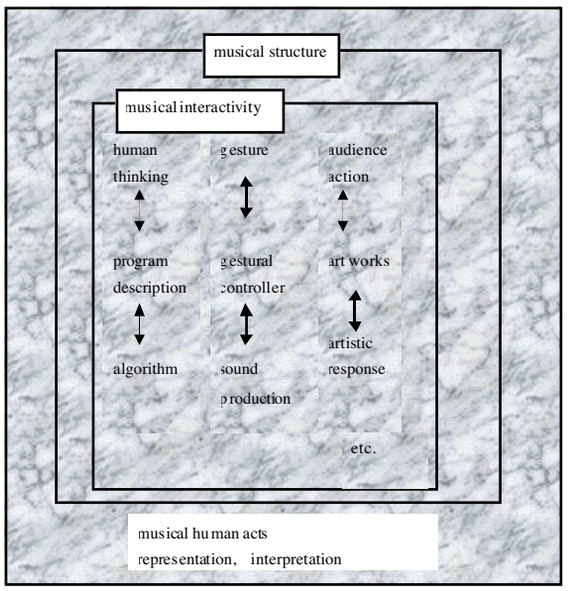
If we want to discuss the ontological levels of music interactivity, we should off course connect the interactivity to all the human acts of music, composing performing, hearing and experiencing. What is composed out in the case we use human communication tools (ex. network) and some CAC application? Is composing to construct gesture patterns or network design?

Furthermore, some phases of musical application of interactive technology or musical expressions that reflect the interactive technology should be pointed out. The musical interactivity has some specific variations of interaction because music has been traditionally a representative and performing art. *Representative* means that music has two steps of interpretative levels; from score to sounds, and, from sounds to meaning. And, to be *a performing art* means that music has gestures or motions that comes from human bodies. The problems of representation and performing art will be included to the discussion of ontological levels.

2.3 Interface Forms

As I said above, interactivity is one of the information-processing situation. So the problem is what kind of information is to be connected to which kind of information; from human body motion, biological information, sound information etc. to sound material, compositional logic, musical parameter and so on. This problem depends on the interface form and that is a hot topic to the information theory as in *Wanderley2000.*

In the following chapters, three type of interactivities will be specified. These cannot be noted if the researchers are concentrated only on the interface. I try to clarify the characteristic points of the three ontological music interactivities.



3. Musical Interactivity

Here I suggest three key concepts for the musical interactivity; score, ensemble and concert. These three words are all traditional music terms and they have already established their positions in the ontological levels of music. Score is the result or the descriptive record of composing, ensemble is the human relation in performing and is the visual information for hearing or experiencing the piece, and concert is a framework to experience *musique pour musique*.

3.1 Score

The score of the interactive musical art is not prescribed. The tonal structure of the piece is not decided before the performance, furthermore the situation is different from that of improvisation. Above, the composer's job is not necessarily writing the score but making the patches which are not necessarily the musical language, because the descriptive language Max does not provide music items (e.g.notes, chords) nor controls structures (e.g. counter melody, repetition). The patches, that is, score-like prescription made by a composer should have interaction with the performance. This is, ontologically to say, the compositional-type of interaction.

The structure in the sense of music theory is here open form as in the indeterminant pieces of John Cage. In the case of the piece of Pierre Boulez, for example in <Répons>, the structure is *partially* indeterminant. The second type of structure here includes all items of Ircam software, as well known. As a representative art, the intaractive music has multiple interactions, and there can be multiple design/realization from score to sound not by human interpretation but by way of the context programming.

3.2 Ensemble

As in Philippe Manoury's <La Partition de ciel et de l'enfer>, one player leads the ensemble but some optional phrases or sounds come out depending upon the patch (indeterminately), so score following system makes the ensemble rational. This is the ensemble-type of performing interaction. With interactively composing MAX program, <La Partition> can be said to be technologically interactive. The real situation of the ensemble of the piece has more complicated than usual because it includes not only communication of players but also communication between human musical information and the processing by computer.

In traditional music ensemble form people share the common culture for the incarnation of the score. Different culture/genre has different ensemble form in order to make musical contexts. There have been metrum and phrasing for ensemble. But in some interactive contexts like <La Partition> the only relation that is established is that between trigger and the response in place of metrical rhythm or phrasing.

3.3 Concert

<Concert> is a traditional social form of music performance and hearing, and it remains to be discussed. The situation of interactive communication in/out of the concert should be discussed in relation with the methods and tools for sound description and aural perception.

Michel Wasivisz explored a new interaction. We call it the mediating-type of interaction. That exists between performer/composer and the audience.

Waisvisz's Operation LiSa(1996) is the name of his musical performance. He does not use the word<musical piece> for that performance because it is interactive between him/his machine and the audience.

LiSa (Live Sampling) is a realtime audio manipulation environment. The program uses the on-board audio hardware of personal computers, so it turns the computer into a versatile audio sampling machine. Complete program control is possible through MIDI, so the user can make a stage performance with it.

In Operation LiSa, the<interactive composition> is realized. The process of composition is quite different from that of Manoury. In the performance place, the composer/performer catch some sounds from the audience through the microphone. The sampled sounds are morphed by LiSa program in his performance. By The Hands, the performer hands and fingers can control MIDI note data, and The Hands map the distance between two hands mapped, for example, to the volume data. The audience knows that the sounds they hear during the performance are originally the sounds, which they themselves had made. In the musical performance, the sound materials stemming from the audience have interaction with the technological instrument (technological level) and with the performer/composer (human level). Until now the instrument The Hands has been performed only by Waisvisz , the founder. Waisvisz makes improvisational performance, so he is a performer/composer. The system is very personal but his performance has a new musical context that includes the interaction between creator and recipients. And it also has a prominent mediating form that liquidates the form of concert.

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SEMIOTIC STRUCTURE AND RECOMBINICITY

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Abstract

This paper focuses on software based automated composition systems operated by a single user to create music for closed system dramatic narratives where the dramatic parameters are known but the dramatic shape and outcomes are not predetermined. The concern is with a system that will address Kansei (emotion based) [11] *approaches to narrative structure, musical generation, and performance. The model proposed allows for music creation from controlling a 'flight simulator' interface that represents emotional states rather than dealing directly with the composition process, allowing non-composers to recompose or explore a work in different ways. The system could be incorporated into non-linear interactive digital media, allowing different musical paths through a structure be taken.*

1. Introduction

Automated composition systems fall into distinct areas: Algorithmic composition from various non-human sources, such as fractals [12]; categorizing and reconstituting existing musical material [6]; interactive music systems [17]; systems for generating and specifying sound material [19]; and autonomous music systems that include Kansei material [4,15], usually with some sort of robotic input [19].

The idea of a Kansei (emotion based) [11] system centered on one computer driven by one user has begun to be explored theoretically as a means of automated film music scoring [7], but there are limitations in the theoretical model through addressing musical language independently of the emotional structure of the dramatic narrative. Further, the system proposed is a means of automating scoring for *linear* films.

Recent work in automated film/multimedia scoring suggests a way forward by beginning from existing moving images, translating these to an emotional dynamic outcomes, and assigning these outcomes to automated musical equivalents [9]. Non-composers can use this system. The limitations of this work in the first incarnation is that it cannot deal with complex dynamic moods, and it is primarily for linear systems.

More recent work [10] extends this approach by allowing a score to be automatically generated by images without the film having first to be manually broken into segment and moods manually assigned, making it more suited to non-linear approaches.

The advantage of both systems is the automation of Kansei based music composition with a musical/thematic sense, making them more aligned to traditional methods of music composition for general communication.

The drawbacks are that neither begins from an overall sense of the *dramatic structure* of the film or media they are to be used for, or are concerned with musical thematic development over an integrated range of outcomes. Further, although the notational outcomes are automated, the performance outcomes neglect Kansei approaches to automated performance [22]. These are also largely CRISP systems that lack a flexibility of responses to similar situations when repeated.

Recent work on mapping emotional narrative structures [20, 21] gives established composers the tools to generate Kansei based works from simulating the emotional flux and tension between part of a system, but not the means to generate music automatically.

By adding Kansei based music generators to Kansei structural models [21], a composition could be altered by dealing directly with an emotion scheme, addressing the limitations of current closed system. The modeling process allows for music creation from controlling a 'flight simulator' interface that represents emotional states rather than dealing directly with the composition process, allowing non-composers to recompose or explore a work in different ways.

The Kansei link can be reinforced by adding Kansei generators to the performance outcomes [22].

2. Modeling Narrative Structure

A Kansei based music generation system first needs to address dynamic narrative as structural expression in *combination* with a musical grammar approach to generation [14]. The limitations of a purely grammar based approach to recombinicity in this context are evident in the next section.

Research into applying system dynamics modeling [2] to map musical dramatic narratives [21] allows experimental composers to address the structural/semiotic way many non musicians 'read' music, and presents a contrary view to the idea that musical language/grammatical patterns and semiotic meaning are interchangeable. The method using system dynamics modeling is briefly outlined below.

System dynamics methods focus on simulating narratives based on influence diagrams, stocks, flows, and feedback loops [2]. They allow modeling based on actual figures, or soft concepts based on numbers assigned to qualitative scales.

software to simulate the narrative structures of plays to show different plot outcomes.

Developing these models relies on a three step process: drawing the structure of the narrative or situation being examined; making assumptions about the nature of the relationships between parts of the structure; and running the model in compressed time to illustrate the interaction of various parts. A main significance of these tools, in addition to checking assumptions about the situation being studied, is that they can be used to run 'what if' scenarios.

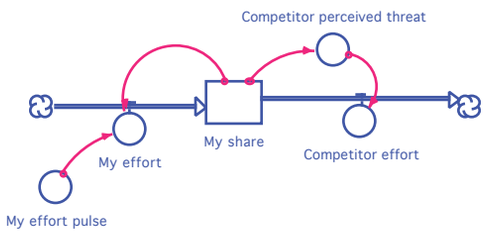

Figure 1: SD variation of 'Limits to Success' archetype.

The simple illustrative example model (figure 1) is built using *Stella* software; the double lines with an arrow represent the direction of flows of information (like verbs). A box is an amount or stock of something (like a noun). The single arrow lines illustrate feedback or influence connections. The 'clouds' indicate zero activity. The story told here is of increasing ones effort in the face of competition, and how one's effort is limited by the action of a competitor sensing one's increased efforts. Relationships between parts of the model are influenced by adding either graphs or formulas into parts of the object oriented diagram to reflect assumptions made. This takes place 'behind the scenes' in the software by entering a lower level, and are not seen at the runtime level.

Based on this notion, the narrative in figure 1 could, for example, be the story of the juxtaposition of two primary emotions in a play: an increase in happiness being offset by an increase in sadness, with the stock (middle box) reflecting the net result of emotion between two characters in a play. The strategy each character takes is added in the assumptions made when adding the formulas for the simulation.

Using system dynamics methods and software then allows for the modeling and simulating *closed systems narratives* and provides tools to help come to terms with the *dynamic structural* experience of emotional narratives [21]. The advantage of this approach as the basis for an automated music generation system is twofold. First, composers can use Kansei information as the basis for *structural dynamic expression*, and very complex emotional narratives modeled. Second, by using commercially available software, simple flight-simulator interfaces can be constructed to control a few or many parts of a very complex SD models, allowing others to test different strategies and dramatic outcomes possible in the model without having to understand how to construct the underlying model's structure.

How does a composer/performer use the simulations to compose music? Writing music to reflect changes of emotion in dramatic situation is a longstanding tradition in the last century in narrative film music, with its roots in the operatic tradition [8]. The approach is incorporated in recent automated film music systems [9]. The historical techniques of film music composition allow creativity within a broadly agreed framework of semiotic meaning [17] with an *intended* audience at a specific time and in a particular context.

An advantage of the SD approach as a basis to move to an automated composition system, in contrast to others [6] is that it does not attempt to express meaning based in a shared semiotic scheme by taking snippets of previous musical *language* and reassembling them in an emotion/semiotic haphazard manner, but begins from coherent semiotic narrative. i.e. you have something to say in the first instance, or a story to relate with structural/thematic coherence. A parallel is that rather than attempting to write a book by learning grammar and collecting words from books, one starts from themes and plot, and then moves to realizing the story modeled on how a writer might control syntax and grammar. The recreated words (performance) must, however, also reflect the semiotic scheme, an issue that will be deal with later.

Given the difference in approach, the question remains how to automate the human agency (composer) or 'expert system' in an emotion/ semiotic grounded system; and how to keep the system flexible enough so that it does not have to be rebuilt for small alterations an operator may want to make to a flight-simulator interface interfacing the underlying system dynamics model which drives the composition.

4. Rigid Systems

Many automated music composition systems like M Music allow non-professionals access to music composition tools without high levels of expertise in music. Yet, the musical results are usually poor because of a lack of methodology to control dramatic musical structure and emotional semiotics. Professional automated composition systems such as MAX allow extensive music generation, but these systems are also not primarily grounded in emotional/dramatic semiotics.

An intuitive way to approach the automation problem from a compositional perspective, and the way many conventionally approach the problem in current automated systems [12] is to construct a number of music rules that will feed existing composition packages such as MAX, and add Kansei translations to the rule base [4]: CRISP systems built for specific instances.

There are however major limitations with the approach theoretically and practically, as there are with many current composition systems that use an approach that is too prescriptive in algorithmic composition. For example, even with greater random functions added and greater choice of material, the output lacks variety to single solutions, and the flexibility to be generalized.

The general approach is extended and implemented in current automated conventional film/Kansei music approaches [9, 10] which are influenced by automatic music generation based on

systems allow a flexibility of music responses not from specific emotion/structural mapping (which may sometimes reinforce but sometimes require *contrast* with visual information), but by interpreting the visual information imputed through scenic *feature extraction*. i.e. The primary technique becomes 'mickey-mousing' at a micro level.

A further limitation with these automated systems [9,10] is in not being able to quickly change the rule base, and the style of one composer (expert) dominating the musical outcomes. That is, they also lack generality like many algorithmic composition packages that are too prescriptive. In addition, with these systems, there is a problem in dislocating performance value and MIDI triggering of the generated score. Performance value as a means of communication is not integrated with the emotional/semiotic message conveyed by the Kansei structure of the narrative.

In order to be affective in a holistic sense of semiotic coherence, a Kansei based automated composition system then needs to integrate structural narrative expression, thematic generation tied to semiotic structure, and expressive output related to semiotic message. At the same time, the system needs to be robust enough to deal with many different problems, and flexible enough to generate a number of outcomes.

By using a SD [1] approach to generate the basis of the score [22] the advantage is that the emotional content can be very precisely mapped and with a sense of the overall dynamic; one is not tied to visual information as an input; the system is flexible to be used as a stand alone devise or in the context of many media, with or without significant visual input; and semiotic structure is itself becomes a significant means of Kansei expression. The disadvantage is that the parameters and structure of the closed narrative have to be mapped before the work can be *recomposed*. This becomes a *primary* creative/compositional act for narrative artists.

5. A Structure/language/output Kansei Automated Composition System.

Figure 2 (below) provides the conceptual model of the integrated Kansei system. There are similar approaches to some aspects of the model currently developed in robotics/Kansei field with musical outcomes [19] but it has yet to be fully explored with a Kansei base, or integrated stand-alone systems.

The decision maker module (adaptive agent) 'trades off' the rule base from a number of influencing modules. The Timing and Episode module alters tempo and converts the length of time available into bars, a standard part of most film music-scoring programs such as *Cue*. A phrase generator is included. Further, the module decides if a theme should be current or absent in the music depending on its prominence in the underlying SD model. Not all themes are present at all times. They may appear and reappear/alter, for example, with reoccurring episodes.

The theme to motive rule base translates emotional themes into musical motivic material. In the Western music tradition, there is a long history of this translation process in operatic Greig).

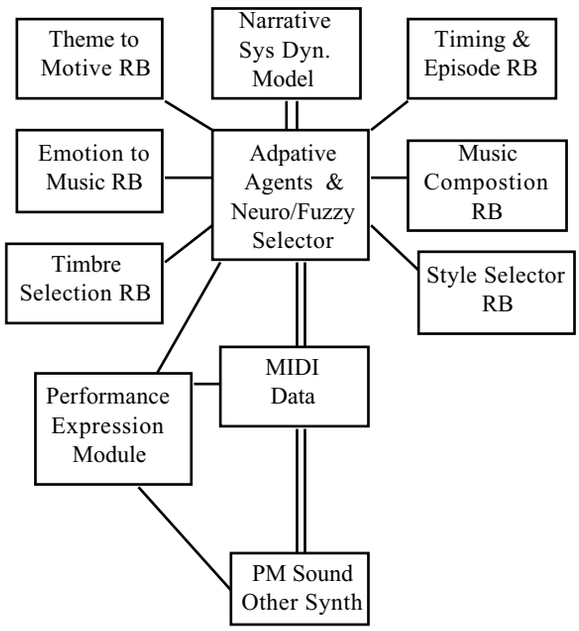

Figure 2. Integrated Kansei system

The dynamic manipulation of emotions based on musical themes is part of the standard techniques of film music composition (Korngold, Steiner), as is the manipulation of musical material to provide variation and interest in standard compositional practice. The rule base for this module based on these principles need not be extensive [6]. It is grounded in the way basic elements of music (pitch, rhythm, tempo, mode, timbre, pan, reverb etc.) react at the poles of emotional extremes [17], avoiding the need for an extensive expert system.

The timbre section module according to mood is a similar part of the standard technique of film music composition. For example, love as a Tuba rarely represents an emotion unless one wants to be comical.

Existing empirical and applied research work in the literature influences other aspects of the system.

Music composition rule bases modules on tonal (or atonal [6]) music grammar and syntax is part of many currently available algorithmic software packages [13] although few of these are driven by semiotic concerns. The rule base to match semiotic input to music output in generic terms based on conventional practice has been implemented in other systems [9].

Music style selectors are regular feature of many commercially driven sequencers, such as *Band-in-a Box*. The module includes composer stylistic signatures, a notion central to Cope's work [6] on aping other composers and extending one's own compositional work.

The output of the central decision making module triggers a MIDI data generator, influenced by the performance expression module, through applying, for example, machine learning methods to understand the relationship between emotional response and the manipulation of real-time instrumental performance elements [22] amongst other

dynamic model with performance expression to ensure that the performance reflects the emotional/semiotic basis of the music.

Physical modeling synthesis is intended as the main driver for the lead expressive parts, as this allows timbral control in real-time to be an aspect of expressive real-time performance in the way most acoustic instrumentalists manipulate this parameter as a means of expression. Background elements need not use the same synthesis methods.

6. Conclusion

The approach/ model presented attempts integrate Kansei information at a structural, generation, and performance level, and in doing so address criticism of other automated composition systems and even some aspects of current contemporary music composition. Through the generation of material from emotion GUI's by non-composers, it allows them to interact with sonic symbols, structural listening, and dynamic message in the semiotic language that reception experience is based. The same composition may then have many outcomes by altering the assumptions that generate the underlying SD model/emotional dynamic. This approach allows the evolution of non-linear narrative film music techniques in the digital realm, with or without visual information.

A criticism likely to be leveled is that applied to many algorithmic composition systems: GIGO, or the lack of originality. In answer, the ability of composers to reinvent within known archetypes is a difference between a focus on creativity in contrast to invention [14]. Also, the system proposed allows for 'experimental' styles to be continually added, modules to be continuously updated and extended, and random functions to be manipulated to create unexpected outcomes. Cope's [6] notion of 'recombining' as a legitimate form of creativity then remains central to the model, yet invention to be incorporated as original extensions stemming from a coherent semiotic structural dynamic.

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Actual-fictive-virtual space: theatre interactivity within a "liquid architecture"

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Abstract

The relationship between theater and the world of digital visualization is marked by mutual inspiration. The defined field of meaning of cyberspace has appropriated, explicitly or implicitly, theatrical principles, while contemporary theater and the meaning of such concepts as interactive and copresence are informed by the meanings of computerized virtual worlds.

The architectonic nature of cyberspace, with its main principle of "being there," places the various participants in a single fluid space. Throughout the entire history of theater, the nature of the communication between spectator and actor-character is the product of, among others, space convention. A traditional theatrical situation occurs in a divided actual-fictive space of action -- Bspace. In this space of action, communication takes place within a fixed hierarchy. Where there is active interaction the actual-fictive space of action becomes dynamic. This dynamic feature does not affect the hierarchy between participants, which remains fixed.

The paper seeks to locate and decipher possibilities of dynamic interactive communication in a theatrical situation. This interaction will be examined as a product of the perception of space composition -- actual, fictive and virtual. That is, an interactive theatrical situation will be presented as it occurs in an integrated, fluid space of action, in a space of 'liquid architecture' whose form is contingent on the interests of the beholder.

The interactive communication channel between the world of digital visualization and theater will be examined not only within a theoretical discussion based on comparative study, but also as conclusions drawn from the study of a project to be presented during "The Festival of Fringe Theater" held in Israel (Oct. 2002).

Many interesting attempts have been made to use new technology in theater productions, or to place a dramatic situation inside a virtual world. Few of them have earned the title of "virtual theater". Such an epithet would require the co-existence of theatrical aesthetics and virtual aesthetics.

This essay deals with the reciprocal feeding between the medium of theater and the world of computerized simulation. We shall try to investigate how virtual thinking can be applied within the theatrical domain of meaning, in an attempt to shape what may be defined as "virtual theater". Our claim is that to achieve this, the concept of theatrical space must be changed so that it can assimilate the concept of "liquid architecture", characteristic of a virtual space. A different concept of space will allow for a substantial change in the relationships found in the theatrical situation. This new concept of space will have to address the difference between the virtual and the theatrical worlds, which differ vis-à-vis reality. This is the point of departure for the absorption by the theatre of virtual thinking, for the existence, side by side, of the virtual and the theatrical.

"Give and Take" – The Theater and the World of Computerized Simulation Feed Each Other.

The defined domain of meaning of cyberspace has borrowed principles from the theater – openly or otherwise.[1] We can state the identical ontological nature of the virtual-digital world and the fictional world of theater. The theatrical fictional world contains phenomena that feel and look like reality. One can respond to them as if they were actual, draw conclusions about our reality – even when they do not necessarily possess a traditional, physical basis. In fact, this is also the true definition of the term "virtual" [5] (p.8). The theatrical experience rests on the first, widely accepted aesthetic assumption, postulated by S. T. Coleridge: "The willing suspension of disbelief". The spectator's "disbelief" stems from the ontological status of the world of fiction, knowing that such a world has no actual physical existence. This disbelief is based on the illogical (according to the criteria of deciphering phenomena in real life) connection between a fictional world and the real one.

The primary condition for a virtual-digital world is synchronization of action. In the theater the viewer acts in coordination with the world on stage, and the type of relationship with the audience this world dictates (he sits, watches, strengthens 'role behavior' by applauding, etc., or else he becomes involved in the action to an extent dictated by the creators of the show). Failing such coordination between stage and viewer, a theatrical situation cannot exist [2]. The agent in the digital-virtual situation is defined by the actions it performs. In a theatrical situation the actor is defined by his role – the character he plays. In the same way, the term "audience" is a functional category of the theater: it is a concept produced by virtue of the role played by a group of individuals in the situation. We may say that all the participants in a virtual-digital situation use objects taken from the realism of simulation, and by relating to them, they study the objects and, in fact, define them. The same is true for the dramatic world of fiction. Depending on how the characters on stage relate to it, a roll of blue fabric undulating on the stage can became 'the sea'. The choices of representation are made possible thanks to the theatrical domain of meaning, based as it is on media convention, which is different from natural logic. The representation is validated by the way in which the characters on stage relate to the object.

Thus, the world of virtual simulation comprises numerous elements from the theatrical mode of thinking. On the other hand, it also contains various operational components. The experience of a subject entering this virtual digital world is unmediated. Nor is the virtual world founded on a preliminary design of action, but on the potential of a set of actions fed into it as part of the representative world itself. The fictional world of theater reposes on a built-in process of pre-designed actions. These differences between the operational process of the virtual world of simulation, and the theatrical fictional world, are the immediate outcome of the divergent relationships involved in these two worlds.

The virtual, simulated world sustains an interactive relationship, while the fictional world of theater relies on interaction-reaction. The elements most conspicuous for their inequality in the theatrical interaction are: initiative and control. The theatrical spectator, while participating in the defining of the theatrical situation, remains totally dependent on the group of creators. Even in the theatrical genre that "lets the audience into" the world of fiction (e.g. the happening – style, environmental theater of the 1960's and 70's), the viewer has little if any initiative or control. A change in the balance of power in the theatrical interaction, and the introduction of initiative and control into the viewer's functioning, will be necessary if the theater is to appropriate performance symptoms from the world of virtual simulation. This will require the ability to make do with tracing the potential for action within the representative world itself, as well as the direct, unmediated experience felt by the spectator.

The nature of space in the theater, unlike that of the virtual

[1] Most of the arguments presented here are inferred from Laurel's discussion [5].

world, is what determines the relationships among those who take part in the theatrical situation. Hence, a theater that tries to assimilate a virtual mode of thinking, must adopt a different conception of space. To this end, we shall propose a concept of space whose dominant characteristic is taken from virtual space. This is "liquid architecture".

'Liquid Architecture' in a Virtual Space

The space of a virtual universe possesses certain basic features, which are in part theatrical and in part alien to the theatrical conception. As in the theatrical space, here, too, 'towns' can be squeezed into 'rooms', landscapes are expressed in architectural terms, boundaries can change and the same expanse can be given various definitions. The qualities of both virtual and theatrical spaces contradict some of the basic parameters by which we decode actual space. However, the fluidity of the virtual space is also – and mainly – the result of the interactive relations in the world of digital simulation. Marcus Novac describes it: "Liquid architecture is an architecture that breathes, pulses, leaps as one form and lands as another. Liquid architecture is an architecture whose form is contingent on the interests of the beholder…"[7](p.264).

'Liquid architecture' undergoes a process of ongoing development and its identity is continuously revealed through its existence. This mode of architecture no longer contents itself with dimensions such as space, form, light and all the other elements that make up an architectural object in the world of reality. An attempt to modulate a fictional world thus characterized and existing together with, and as part of, the actual reality, is the key to a theater that happens within a virtual meaning. The possibility of a virtual theatrical situation is thus one where only the viewer can be its point of departure and 'center of gravity'. It is the viewer who must navigate through an actual space, fitted with virtual applications, which he may perceive and operate as a fictional space with "liquid" qualities. A situation such as we have described could exist with further development of the *Digital Labyrinth Theater*.

The Digital Labyrinth Theater

The '*Digital Labyrinth Theater*' project is to be presented between the 22 and 25 October 2002, as part of what is regarded as Israel's most important fringe festival – The Acco Festival. Initiator and coordinator of the project is the artist Galit Eilat.[2]

Eilat explains her choice of the labyrinth as a theme, by her quest for the experience of navigating through virtual space. The interactive navigation demands that the viewer follow the artist's line of thinking and decode certain clues in order to move on and watch the work in its entirety. The project is made up of several works of digital art, some of which have been shown before, all by renowned artists: the British artist Stanza, Gregory Chatonsky, the Israeli artists Oren Zikerma, Moshun Zer Aviv and Regev Contes, and the video artist Eddo Stern, the Americans Mark Lafia and Teo Spiller, and a work by Marc Voge and Younge-hae Chang. The works will be displayed in a single space, which will be designed as an advanced technological space so that the encounter between it and the architecture of the Old City, where the Festival takes place, will produce an intriguing visual tension. The room will be almost dark, the only sources of light provided by the computer screens and the projectors. The visitors will enter a space whose limits are not clearly defined and move along by looking at, and interacting with, the works. The interactive relationships in the project are reflected both in some of the individual works, and in the overcall course of wandering freely inside this unconfined enclosure. The free order of the spectator's route of navigating through the space, will affect the way in which she/he perceives the project as a whole.

Eilat explains that by choosing the image of a labyrinth, she intends to reflect the hypermedia technology in the structure that organizes the information, and through the roaming experience the viewer undergoes while making her choices in a sequence of hyperlinks inside the virtual space. Essentially, the project is an attempt to test the boundaries of the theatrical medium.

On the surface, we do not seem to be in the presence of what one might call a "digital theater". On the other hand, the *Digital Labyrinth Theater* will hereafter be presented as an event that nonetheless poses the fundamental conditions for the existence of a virtual theatrical situation. We shall also attempt to determine what is still required in order for this project to contain the theatrical and virtual aesthetics jointly and concurrently.

'Virtual Illusion' and Space

The relations between the virtual world and reality, and between the theatrical fictional world and the actual world, are substantially different. Thus, the illusion of a virtual reality is not the same as the theatrical illusion. Therein lies the different aesthetic bases – that of computerized simulation and that of the theater.

The virtual space is designed by mathematical and algorithmic signs. Thus, with regard to the material stage, it is totally different from actual reality. On the other hand, great efforts go into an attempt to design logical links that will resemble the actual world as much as possible. [1] On the operative level, as far as the characterization of space is concerned, virtual thinking constitutes an attempt to bring users into the virtual world. "To be there" (as in the theater), but there alone. In theatrical terms, the illusion of reality in VR is a *delusion* – "complete oblivion" of the actual reality. By contrast, the world of theater is made of reality materials and rests on logical links, many of which do not meet the logical criterion for deciphering the phenomena of reality (talking in aside to the audience while the other actors on stage "do not hear"; saying "moon" and the time on stage turns into night). However, the fundamental requirement in theatrical aesthetics is the co-existence – parallel and simultaneous – of both worlds, the fictitious and the actual, the "here and now", and the "there and then", while the relations between them remain flexible and vary constantly [4]. The viewer is required to enter a state of illusion, not of delusion. The literal, primary translation of the common presence of both worlds, is their separate, or not, existence, in one single space, no matter how divided.

The synthetic image represents a graphic reality, a world reduced to geometry, created by computers and their operation. One implication of this notion is that the user's departure from the world of digitized simulation, the position into which he is flung when leaving the delusory position of the virtual space, his "alienation" from the virtual world – are but an awareness of, and preoccupation with, the operating system of the computer software. The user 'moves' from a "delusory" wandering through the virtual action space, to a cognitive activity in the operating system. Manovich draws an analogy between the aesthetics of this new medium, which regards the user's experience as a series of shifts between the roles of spectator and user, one who perceives and one who acts; and the outgoing presence of the communicative channel in the message, the theatrical "alienation" in the style of Brecht [6]. This comparison is deficient. According to Brecht's strategy the viewer may indeed 'approach' or 'move away' from the actual reality during her "perceptual stay" in the world of fiction. One may compare this situation with the user's range of action inside the virtual space. Going in and out of the virtual world, lies between a space that has an "architectural model" and a space with a "sculptural model". In Novac's words: "Á space modulated so as to allow a subject to observe it but not to inhabit it is usually called sculpture. A space modulated in a way that allows a subject to enter and inhabit it is called architecture."[7] (p.259).

An aesthetic perception that combines two such models does not admit a common presence in the same space; nor can one talk of

[2] Galit founded *digital art lab,* an Israeli center for digital art.

a space-relation between virtual and actual. Such an aesthetic perception implies a different concept of space.

In the theatre, the movement is always between architectural models. The spectator enters an actual place; the venue of the show, and the theatrical situation unfolds inside and in relation to that space. The spectator is never expected to observe the world of fiction as a complete outsider, "through the operating screen". Such observation would empty the situation of its theatricality. On the other hand, admitting the viewer into the fictional space, not just as a matter of perception, but in actual fact, while both worlds continue to co-exist parallel and simultaneously, is indeed the primary and necessary pre condition for a theater in a manner of a virtual world. How, then, can two such different characterizations be accommodated?

The history of theater has seen attempts to take viewers inside the world of fiction. What was missing from these earlier trials was that virtual component which dictates an interactive relationship that keeps altering the definition of space. They lacked a situation in which not only the nature of the space would determine the characterization of relations – as it does in all theatrical situations, but in which space would became transformed according to the interactive interaction taking place "inside" it.

Thus, in a theatrical concept with a 'virtual thinking', the movement of the user to and from the virtual worlds, that process which thrusts from a virtual space with architectural qualities to an interface with sculpted attributes– must change, and adjust to the theatrical experience. The viewer's "circular movement" – approaching the world of fiction, then drawing away from it – must flow within a total architectural space. Moreover, the two architectural spaces within the whole – the actual and the fictional – must co-exist, while the fictional space varies in accordance with the balance of changing powers in the situation.

"Virtual Theater" – a Spectator Navigating a 'Liquid Space'

The art of installation is a mixed discipline [3]. Here, as in other elements, the installation has a respectable theatrical lineage. The relationship between installation and theater, just as between the theater and the world of computerized simulation, is based on give and take. In an installation, the concept of space is a compound of art and everyday life, a dynamic medley based on reality elements, again after the fashion, and as an extension, of the theater. However, the installation space can also function differently. Not merely confined to the limits and form of the object as such, it can evolve and develop as the viewer's consumption process advances, and during the time it takes. The installation may at times assume its identity in accordance with the beholder's interests and wishes. Such characterizations are, essentially, virtual. It would therefore make sense to search for the answer to a theatrical space that "thinks" virtually, in a certain mode of organizing a group of installations in a single space, based on their combination.

The *Digital Labyrinth Theatre* is made up of several installations and includes interactive as well as reactive elements. The complete space of the project is *one-space* type – an actual space without separation between performers and spectators – unlike the *b-space* type, which maintains the traditional division between stage and audience. The *one-space* type is a pre-condition for the existence of an interactive relationship in a theatrical situation. The space in the *labyrinth theater* includes the various fictitious objects formed by the installations, with no clear delimitation between the objects themselves, as well as between them and those who watch them. Thus, the project allows for an interactive relationship with viewers both on an individual level, and in the project as a whole. The viewer's freedom to roam in and between the works alters the 'labyrinthian' character of the project. It is the interactive dimension that enables the space concept of the whole project to assume the characteristics of "liquid architecture".

In the *digital labyrinth theater* project the space has a potential that differs from that of digital simulation worlds, from which one exits onto a computer screen with its sculptural qualities. Its potential is also different from that of a possible blending of the Internet and the traditional theater situation. These situations lack the aesthetic theatrical element of a common presence in an actual space, in the sense required by the theatrical illusion. A space like that of the *digital labyrinth theater*, which is composed of virtual and non-virtual parts, all in the same actual location, can provide the necessary conditions. Here, the move from one "fictional" world to another can still be achieved inside a "complete" fictive world whose space is architectural.

Provided the viewer is guided by stimuli implanted in various components of the project, such conditions could allow him to create a world of fiction to suit his desires and imagination, and in relation to the actual space. However, as long as the different works that make up the project do not unite on the perceptual and narrative level, other than existing together in a single actual space, and beyond the overcall concept of a labyrinth, the project will fail to provide the conditions necessary for the creation of a comprehensive world of fiction. By planting stimuli in the works – stimuli that can come together, in various forms and various linkages, to produce a perceptual and narrative completeness, one would be able to create a 'liquid' world of fiction. The visitor would be expected to navigate the labyrinth, select a "link" and follow it; or otherwise change course and hook up with another "link". By opting for a particular work as a starting point, he can be thrust towards realms into which he will weave the other works. This would be made possible thanks to a variety of stimuli which would cause the spectator to move from a situation in which he creates a "story" and plays a role in it, to one where he will trace the various options that unite the elements in space into one complete story. From the concept of art as a consumable object, the project has to move to an art that shows itself in the field lying between the viewer and a sequence of stimuli.

Heavy demands are made upon the viewer in such a situation. She is the protagonist of her own, self-created world of fiction. There is no 'pre-existing meanings' she must discover, but a potential for her to find and 'produce' meaning all by herself. The illusion created here would reside in the relation between the compound of digital and non-digital images, the synthetic and the actual, as organized into a fictional entity on the one hand – and the actual space in which the individual viewer navigates.

Flesh and blood actors may disappear from the new concept of a theater that assimilates the virtual domain of meaning, but a spectator navigating inside an actual space, and succeeding in transforming it and embodying with it a fictional world, in a space that breathes together with him and changes accordingly, is the proposed basis of the new theater concept. A 'virtual theater' is indeed the theater of a lone beholder in an actual space, where virtual and non-virtual elements act side by side.

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Modeling Intention in Creative Systems: Logics and Generative Art

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ABSTRACT

This paper examines the possibility of modeling intention in creative computer mediated systems. It discusses the way that I have employed logic and logic programming as a significant mechanism that has helped me develop certain kinds of generative art towards this end. Central to the approach to participant interaction is an extension of drawing practice which uses unhindered human movement within a motion tracked space. Central to this process is the absence of a physical connection between human and computer.

1. Introduction

The paper reports on work done in the domain of interactive art to investigate the ability of a computer system to facilitate exploration of the processes occurring from the initial intention to the observable realization of that intention. Observable referred to here relates to the acknowledgment that an intention has occurred and that phenomena exist that represent the realization or articulation of that intention. The work is described in the context of generative art systems, based on logic programming, that have been extended to include interaction with the participating audience.

The authors' approach to these problems is described. This approach is an extension of drawing practice which uses unhindered human movement within a motion tracked space. Central to this process is the absence of a physical connection between human and computer.

2. Generative Systems and Logic

To many, music is the highest art form. The purity and yet the power of these abstract structures in time seems to cross cultures and ages and are often at the centre of, or perhaps pointedly excluded from, religious worship. Not surprisingly, painters quite frequently aspire to being composers or musicians. Formally, the distinction between seeing and hearing aside, the key difference between painting and music might be seen to be the presence of time as an integral element or dimension. Verotov's characterization of his film The Man with the Movie Camera as "an experiment in visual music" perhaps captures the visual artist's interest in time [1]. However, other influences have also been afoot in the 20th century. For example, in work that uses geometric or other systems, it has been common to produce series of works that often have a natural sequence. It is only a small step to think of them as stills from a movie. Another closely related development was the early use of computer programs to *generate* drawings. Generative works of this kind lend themselves to the automatic generation of a series because the computer program is a kind of general structure or form that can apply to a class of works, each a variation of another. It seems natural to extend such explorations to time-based visual art. See for example, *Sydney* by Edmonds (fig. 1) [2].

There are a number of classic mechanisms that artists use in making generative work. Variations on genetic algorithms are, perhaps, the most common. These are modelled loosely on scientific theories about life and the development of new life forms. Selection of the fittest, or elimination of the weakest, is an essential part of these processes and the application of pseudo-random numbers to selection or, in interactive works, selection by the audience or participant are normal. The work described here is quite different in its inner

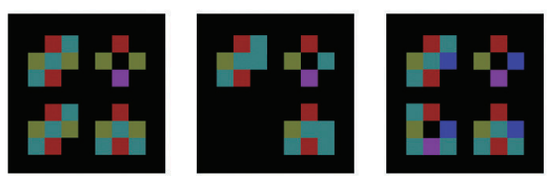

Figure 1: Stills from Sydney (1995) by Ernest Edmonds

structure to such "genetic" works. This work is constructed by specifying rules that determine how the generation of images should progress. These descriptions do not contain any random element and are not intended to model any particular scientific theory, either loosely or tightly. The mechanisms discussed have been developed purely to support developments in the making of time-based art and no meaning for them is claimed beyond that. The paper does not attempt to describe any kind of scientific, aesthetic or other motivation for this work. This account simply confines the discussion to the methods for constructing generative time-

based art works, interaction with them and the search for understanding intention.

In generative time-based art, the explicitly defined part of the work is the structural element including, specifically, the *rules* that are to be used to determine in which order and at which pace the image sequence should develop. Although random or pseudo-random elements can be employed, in this work it is entirely deterministic. The complexity of these works leads to enough uncertainty without adding randomness as well. In comparison to music, this work has a relationship to the early works of the composer Pierre Boulez and others who took the serial music concepts to a more extreme level than Schoenberg by including more musical elements in the structures that the serial forms defined. In this work, just as the images have an underlying order about them, based on geometrical and colour relationships, so the progress in time also has an order based on the generating logics. The exception to this determinism comes with the addition of *interaction* as an element of the work.

3. Interaction and Intention

A series of experiments are being conducted that explore the relationships between movement and external representations of this behavior. This work is base on the development of interactive generative systems.

Heron (2002) by Edmonds, for example, is a work that consists simply of a set of coloured vertical stripes that change in time. Physically, it is a projected image on a sheet of translucent plastic hung in space.

In this case, the image is a set of coloured stripes and the nearer the person is to the piece the narrower the stripes become. This creates a sensation of the work retreating as the viewer approaches it. In addition, the rate of change is, up to a point, directly proportional to the amount of movement (e.g. waving) that is detected. However, too simple a relationship is not particularly appropriate. One point is that there is always some movement (using y=Mx+C rather than y=Mx to relate image rate of change, y, to person movement, x). In addition, when the degree of person movement reaches a particular level, the images revert to the slowest level (**if** x>*Limit* **then** y=C). In effect, the piece does not "like" wild articulation. This notion is borrowed from Edward Ihnatovich, whose piece SAM, moved in relation to sound but stopped if things became too loud [3].

As the day progresses, *Heron* builds a simple record of events as a vector in which the degree, extent and variation of movements in front of it are represented. Meta-rules make use of this data to modify the behaviour patterns, for example, by lowering the threshold, *Limit,* which is used to define the degree of movement to which it will not respond. One could say that *Heron* can become 'tired' of people jumping and waving in front of it all day long.

The experiments are based on analysis of behaviour patterns observed by the system in the audience participants who interact with the work. The logic of the generative system is being modified by the behaviour of people who are thought of as communicating with it. The process is one of the art work system inferring intentions or meanings in the movement of the human participants and hence engaging with them in a kind of primitive dialogue. From the human point of view, we can see the process as one of trying to control, or partly control, the behaviour of the system by expressing intention through movement.

4. Conclusion

The use of logic programming to provide a way of composing time-based generative art has the great advantage over procedural programming methods. For this kind of work, it is very concise and productive in enabling thinking about the work to include a significant investigation at a structural level. Furthermore, it is relatively natural to extend the method to include interactive work and, with the help of meta-rules, interactive work that performs differently over time according to experience. As the artwork learns, it changes the way that it *develops* rather than simply the way that it employs stimulus-response rules to govern its performance. The interactive art systems advocated by Cornock and Edmonds [4], and others, can now be realised and developed in ways not imagined thirty years ago.

Current work is described that involves investigating a method to capture/articulate the "space in between" an intention and the realizable object. This includes the construction of mechanisms to extend the control of a human in the context of a computer system and the development of a language of articulation that assists the realization of an intention.

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Into the Hollow of Darkness
A Virtual Environment Project on Interactive Peripheral Perception

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Abstract :

The author considers the meaning of interactivity and the potentials of virtual environments, to explore, in particular, the total visual field and its periphery. She presents her artistic project whose aim is to make the viewer more sensitive to his or her own perception, respecting images and indistinct sensations they may give birth to.

Virtual environments offer new possibilities for exploring perception, by linking — thanks to interactivity — the viewer's behaviour to the totality of his or her visual field. *Into the Hollow of Darkness (*http://www.cicv.fr/creation_artistique/residences/annesarah/), a panoramic project in progress, exploits in an original way the peripheral area, encouraging the viewer to adopt other behaviour towards images and sensations.

I will first present a few interactive installations which changed my point of view on interactivity. Secondly, I will reveal the origins of the current work, both in my previous realisations, and in other art (painting, literature). The third and last part will develop the project itself, its problems and results. Images will illustrate my talks.

1. Some interactive works for a reverse act ?

One can ask how interactivity constructs the meaning of the art work. More value is generally granted to action than to contemplation (negatively connoted because it is considered passive) of the work. There reigns a demagogy : the viewer would be more present in their relationship to the art work because he or she would "manipulate" or "literally" transform it; he or she would take part in its realisation, and would become its co-author. However, as with a painting which we can watch for a long time and interpret differently according to moments/years/centuries, the artistic relationship between a viewer and an art work exists within, mentally (we began this reflection in an article [1]), and essentially concerns the viewer. The transformation pole must not be confused : It is the transformation of the viewer which matters. The art work, and so the artist, aims to modify the viewer, by communicating differently ideas, emotions, sensations, etc. Acting on an art work becomes interesting only so far as it allows one to act indirectly on oneself, thanks to an action/reverse, reciprocal thought, allowing a change in one's way of acting, seeing , one's way of being in the world.

In the context of this duality "centre of action/centre of transformation", or "movement/interiority", a few art works have marked me, dealing with "active contemplation" or "passive action" on the image. Each of them happens to offer reciprocity in action. I will present them in the order I discovered them.

These works did not have a direct influence on my project. They give sustenance to my thoughts on interactivity, and in particular on the function of gesture, as a vector of power, and on the meaning of the power. Above all they have shown me that it was possible to use interactivity in a different way.

The first work which disturbed me is *Zerseher*, Sauter/Lüsebrink, 1992, Germany (Ars Electronica, 1992, and http://www.stenslie.net/stahl/txt/transmediale/sld009.htm).

The direction of the viewer's gaze is picked up (camera + computer) and slowly modifies a woman portrait (2D simulation of a Renaissance painting ?) until it destroys all figuration, all legibility. The action of the gaze is irreversible : by looking, one destroys.

The interpretation of this work is rich in several possible inversions : if I can destroy by looking, can't I then create by looking as well ? If the person in the portrait is watching me, and watching me destroy her, couldn't she destroy me by the same means ? And, as in the *Las Meninas* (1656) by Diego Vélázquez (1599-1660), the art work gains in richness through the crossed gazes (according to the analysis of Michel Foucault [2]). Or isn't she erasing herself, and taking herself out of my sight, sinking under the simulated pigment, like a creature under the sand ? *Zerseher* shows how our gaze is inevitably active, on things, on the world and on ourselves.

In relation to this action of looking, we could mention the video work (non-interactive but visualising a mental interaction) *Der Garten*, from Tamàs Waliczky, Germany, 1992, where a child perceives the world in a spherical way, bent depending on his proximity. Moreover, the parent, who is observing the child, is subjected himself to the influence of this gaze, because he sees the world bent according to the child, according to the child's subjectivity : he takes his point of view. To exchange one's eyes, to see with the eyes of those one loves…

The second interactive work which has retained a hold on me is : S. Biggs, *Shadows*, GB, 1993 (http://hosted.simonbiggs.easynet.co.uk/installations/shadows/shadows.htm).

The viewer is in front of the image, in which a group of naked men and women are lined up laterally along the width of the

surface. Situated in the video projector field, the viewer projects his or her shadow among them, without wanting to, without even noticing it, (this is picked up by a camera + computing device). They move apart, as if to let the viewer pass, but does the viewer want to pass through the wall ? Is it politeness ? fear ? — a feeling which can perhaps be justified by the men and women's nakedness in front of dressed viewers, who are thus in a situation of power.

We find our inversion principle again, the identity between what is seen and what is seeing : those men and women are me and you. We move apart to let someone pass, it is a banal scene, except for the nakedness. The interaction between human beings is constant. *Shadows* makes us feel the space between us, and our own power over one another, whether we want it or not.

This art work (I have seen it only on a CD-Rom) thus emphasises an inadvertent action, a side action. Without wanting to, or knowing it, by our mere presence, by our mere shadow, the double of our body, we modify the space, the world. Our whole outline acts on what is around, nearby — it is not transforming an object, it is moving it a little, but how significant that little is !

The third piece which struck me is *P.M.E. (Père Mère Enfant) Father Mother Child* by Armand Béhard, France, 1998.

The viewer is situated in an open and broken device composed of several screens (areas of, respectively, the father, the mother, the child). A wire-framed cube (the child) circulates rapidly between diverse visualisation zones. The viewer interacts by taking one of the screens. He or she is thus immobilising inside the cube (symbolical isomorphism cube/screen). He or she is also immobilising themselves, being able to watch better.

Apart from the minimal aesthetic choice, and the emphasis on spaces in between, the out-of-field between screens, this art work is at variance with the traditional use of gesture : the interaction here has an immobilising, stabilising action. You stop the cube movement (the child) who was running from his father to his mother without managing to construct himself. The viewer acquires a symbolic place inside the family, his or her contact helps to construct the child, and his or her own vision.

Through these three examples, the meaning of interaction gains its power. Action is open, polysemic, but above all, it becomes a relationship rich in reciprocity. The viewer becomes aware of gesture and of its symbolic value. Transforming the work, and considering its repercussions, the viewer becomes aware of another relation to the world and transforms him- or herself.

On reflection, the interactive device of my own project takes up these ideas of the immobility of the body necessary to the gaze, the inadvertent action, and the possible destruction of what one is watching by dint of wanting to see it.

But the aim of my installation remains completely different. *Into the Hollow of Darkness* intends to make the act of perceiving (in its inexpressible dimension) more sensitive. By refusing a clear understanding, it looks for feelings. It is concerned with "bad" vision, with what one cannot see well : not only are the phenomena abstract, constantly animated, transparent, fleeting, but they are localised in periphery, and low-lighted. It is a matter of feeling the totality of the visual field, and its quality variations.

2. Origins of the project

2.1. Forerunner signs in my previous realisations

The opening of the image has happened step by step from the whole width of its surface to its edges :

In *Aforme, Un peu de peau s'étale encore, Some Skin Is Still Spreading* (animation, 30'', 1990), the animated surface, laid out in "all over", obstructs the flight point, and obliges the viewer to look at it directly. The surface is emphasised ; the literal depth, the volume, the perspective disappear in favour of a subjective, unquantifiable depth of textures. The textures do not carry the identification, the explanation of matter (the object which is seen is made of wood or metal) but carry a real ocular pleasure. Moreover, small movements disperse simultaneously throughout the image and engender visual sensations which are not centered (or peripheral). As Klee would say [3] "the eye grazes", circulates, comes and goes, gleans. The light there is often dim, so much so that the cells of the eye (the retinal rods are more sensitive in darkness, the cones in greater light [4]) perceive subtleties better. In a poem I wrote at that time, I talk of vision in the dark ("To rummage in the dark to find them, and not to find them", see my French web site).

In *Horgest, Outgest* (series of fixed images, 1991-1993), the centre of the image has often emptied itself, encircled by small wiry, undulating, textured forms. These structure the surface and lead the viewer's gaze from the centre towards the periphery. Working with fixed images has given me a better understanding of the complexity of the image's surface.

Finally, in my next to last realisation, *Etres-en-tr…, In-Bees-Tween* (animation, 7'50, 1994) two sequences disturbed me. The first, from the start, presents, in the lower angle on the left, a scarcely visible form which moves, slips, like a thick, reddish snake, while something lighter moves about on the right. The second, towards the middle of the animation, sees the ends of very restless forms trying to come back into the surface of the image but only managing to remain on the edges, opening a mysterious, wild out-of-field. These two moments provoke feelings – very strong in me – of sudden shock : what is happening ? what am I seeing there ? These feelings are all the stronger as my attention is diverted towards other simultaneous events, apparently of greater importance because they are more visible, but lesser in their evocative power.

These complex spaces made me want to enter the image, to immerse myself in colours and in movements.

To know how to manipulate technology rationally and to keep intact one's own sensitivity and the initial ambition of the project are attempting the impossible in image of synthesis. Calculation constrains, with or without real time, because of economic difficulties, force one reduce the display : every calculation costs money, every form needs modelisation, rendering and visualisation work, without speaking of the animation work. 3D computer images thus rarely exploit the image field to its maximum.

I make images of synthesis only through love of art, of the emotions it allows us to grasp, to express as an artist and to feel as a viewer. In this search for feelings, and this panorama project, painting and then literature have played an important role.

2.2 The influences of painting and literature

Painting has played a decisive, initial part in my awareness of the surface of the image and the feelings which colours could engender, in all paintings, abstract or figurative. In front of the panorama *Les Nymphéas* (begun in 1914) by Monet (1840-1926), I remember as an adolescent feeling that my eye was tickled by the colours surfacing on its edges. I nodded my head gently, directed it differently, seeking to vary the feelings I experienced. In the same way, the paintings of Rothko (1903-1970) and the installations of Turrell (b. 1943) have allowed me to feel the quality of matter-light and intense visual sensations.

But *Into the Hollow of Darkness* has, above all, structured itself, crystallised around the texts of Samuel Beckett, *Pour en finir encore* [5] and *Compagnie* [6], and of Edgar Poe, *The Pit and the Pendulum* [7]. These texts present situations in which, because of the lack of light, sight is almost non-existent and the sense of touch is heightened. You do not know where you are, nor what is waiting for you. And however the space intensively envelops you. The awareness of the body is invigorated by the uncertainty of the perceptions. Literature, probably because it doesn't give anything to see, stimulates imagination and related sensations.

Can a virtual environment, essentially visual, provoke such a feeling, and how ?

3. The project : *Into the Hollow of Darkness*

I realised a first stage at the CICV, during the summer 2001 : *Where It Wants To Appear/Suffer*, 14', no sound. It is what the viewer could watch during some "immobile interactions". It is to be seen at the "Electronic theater".

It is not yet being decided whether I will add an interactive sound environment to the visual part.

3.1 Artistic aims

My project proposes a new visual experience. Initially based around luminous material, the essential component in the image of synthesis, and of its subtle variations in half-light, the project gradually opened up to all the delicacies of seeing, to inexpressible perceptive uncertainties : to what cannot be named but which we feel inside, almost physically. It looks for sensory complexity and disturbance.

The visual elements are very important. The viewer is put in a situation where nothing is represented, where there is nothing to recognise. The images are abstract, often fleeting. The surfaces are entirely, wholly animated by very sensitive, almost living movements. The totality, made up of fibrous and soft textures, evokes simultaneously various realms (vegetables, animal, mineral) or environments. The forms are super-imposed and layer the space, breaking the rational order of linear perspective. Finally, perception is stimulated by the edges, in the peripheral field of vision, an area where identification is practically impossible ; only movement can be detected. It is a question of perceiving and feeling as if one had never seen anything, did not know anything.

The interactive device allows the viewer to become aware of the power that the images have over him or her, of his/her own desire to look at them and of the reciprocity in the relationship of power. The rules of interactivity create obstacles to clear and central vision. Having entered the panoramic space of the installation, the viewer progressively notes that the phenomena, perceived in peripheral vision, to the left or right, are difficult to see : they slightly move away, avoid the viewer's gaze, or disappear when the viewer turns towards them. Frustrated, the viewer feels even more strongly their hold over him or her, and his or her own desire to look at them. By slowing down their rotation, the viewer discovers that he or she can hold on to the visible forms, approach them, "tame" them ; the forms correspondingly modify themselves slightly. A choreography takes shape. They start to develop complex relationships, as fragile as human relationships. The installation thus gives the viewer the impression that the forms are alive, he/she can even feel that they are being looked at.

The aim of the work is not to offer to the viewer to decode a system of automatic rules, nor to offer a static space in which to stroll, but a dynamic and relation oriented environment, where observer and observed interact. It is thus impossible to see again exactly what has been seen before. Every calculation is different from the preceding one, not only because of the interaction, but because certain parameters vary throughout the time of calculation. Moreover, certain forms are not interactive, but move as they wish, without interaction with the viewer : they make the system more complex, both on the relationship level and on the visual. Even if the viewer believes he or she "understands" some rules, exceptions are noted and the work continues to be appreciated because the space is plastically rich and neither simplistic nor mechanical, and develops an open symbolism, making the viewer see and feel.

The interactivity in *Into the Hollow of Darkness* proves to be almost paradoxical. It is a case of limiting the power given to the viewer so as to frustrate him or her. The viewer will be required to adopt inhabitual behaviour, in the face of these images which he or she does not understand and cannot see properly. Whatever his/her behaviour is, the viewer understands he/she is always responsible for what he/she sees. Having become motionless, inactive, almost passive, in order to perceive the animated forms better, the viewer understands that, in fact, he or she must let them come towards him or her.

In doing so, *Into the Hollow of Darkness* attempts to give value to feeling rather than knowing, to seeing rather than action, to contemplation rather than manipulation, desire/respect/seduction rather than control/power. In our society, where everything is speeding up, where we must be successful, fast, this view becomes political.

3.2 Technical elements

From June 2002, I have enjoyed the help of Grégory Daniel and Gilles Baptest, trainee computer scientists, supervised by Simteam and LRDE/Epita, for the programming in C, C++ on Open GL, and for the control of sensors.

The space is circular, delimited by the panoramic screen (360°, 3.5x3.5m, back-projection with 4 video projectors + corresponding computers, sensor to be decided). The panoramic screen can be watched by several viewers, one at least equipped with a sensor. The interactive system (polhemus or camera) relates the display of the forms to the speed and the angle of rotation of the viewer. The viewer moves in physical space, but very little in virtual space (only exceptionally and according to certain limits).

The forms are essentially surfaces (2D grids) animated in 3D (textured meshing), about 9 surfaces set in space. Interactive and non-interactive forms co-exist. The forms can be displayed behind the viewer. They can join and then inter-penetrate. The major element in the plastic work consists in choosing the parameters of rendering and visualisation. A scenario describes the spatio-temporal events for each form and the possibilities of inter-action. Once the form has been activated, certain parameters of the visual scenario can vary according to the viewer's behaviour.

Three types of interaction are defined according to the interpretation of the "sensor's givens", making it possible to codify, classify the viewer's patterns of behaviour which in turn prompt the behaviour of the forms.
- Appearance of the forms which are peripheral to the visual field (65° < angle < 85° ? Central vision : angle = 0°) ;
- Reaction of the forms (flight, disappearance, immobilisation, trembling, etc.) according to the parameters and the scenario ;
- Development of other minimal relationships/inter-actions (variation in colour/light/fog, in texture, in surface movements).

Parameters to be considered :
- Calculation time from the start
- Position of the viewer
- The viewer's angle of rotation
- The minimal speed of the viewer (Smin, Smax ?)
- Length of the minimal speed
- Position of the activated form
- Angle of appearance (+ or -, to left or to right)
- Length of appearance
- Delay in reaction in the movement of the activated form (not immediate, for it is non-automatic/living, sensitive)
- Direction of the movement (+ or -, according to the direction of viewer's rotation, variable)
- Length of disappearance

- Added to which are those of the lights, the fog, the materials of the forms, the textures and the movements of each of the points of the forms (which is a lot, but what joy to put them all together!)

All these parameters must be chosen very precisely and matched up in respect of slowness, speed and dynamic, because there will be they which give the sensation of life to the viewer.

Some elements are not decided yet. Is it necessary to deal with exceptional cases : if the viewer moves all the time, could we imagine that the forms come to watch him or her, and stay immobile ? If he or she never moves (but at least enters and leaves from the panorama), the autonomous forms are in any case sometimes visible and encourage him or her to move. Is that sufficient ? The viewer has to make a slight movement in order to come in contact with the environment/world.

One must take into account the possible tiredness of the viewer when choosing the values controlling the display (speed of the viewer, angle and length of appearance). The choice of whether to introduce music also depends on this, for if too many stimuli reach the viewer, without him or her being able to comprehend them, the viewer might not perceive the intention behind the installation.

4. Conclusion

The first stage consists in creating the visual and interactive scenarios (the temptation is big to hide in such a dynamic space a few unexpected events). We will no doubt create a head-mounted display version and a "Cave" one, more portable than the panorama, in order to obtain the final financial backing. But to work so precisely on colours produces technical troubles, and hence financial troubles. I envisage adapting the environment for a dance show too.

If existing PCs are quite adequate to conceive a project in 3D real time, it is not always easy to access the interfaces of virtual reality, especially for an artist like myself who works on her own. The male world is sometimes distrustful. Head-mounted displays are tiring and disappointing because their screens are too small. Distance sensors, which allow the viewer to be unencumbered, are still not sufficiently sensitive, relative to their cost.

But I believe that it is through projects such as this that we can push the boat out together. By relating the totality of the visual field to the behaviour of the viewer, the realm of exploring perception opens up unbelievably.

I imagine a child playing with the device, laughing, turning with arms open wide, looking out of the corner of their eyes to see if the forms are taunting them, and sometimes stopping to watch the forms, and, enchanted themselves, charming them in turn.

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Writing on the Walls of Cyberspace

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Abstract

This paper documents an experiment in visualizing virtual space using metaphoric and literal information. A web site combines "unofficial communication"—non-commercial messages and images in public spaces—with data-determined space. The visual form "maps" and juxtaposes physical and conceptual "locations" of individual works, their makers, and visitors to the site.

1. "Unofficial Communication" and the Significance of Location

It has been said that there are three rules in real estate. 1. Location. 2. Location. 3. Location.

The same is true of graffiti and other forms of public unofficial communication. An artifact's location is often more important than its content. It does not necessarily have to be legible to be "read" as successful. The success is in placing a highly visible message in a particular place where it might last for a period of time before being erased by the authorities, time, or a more aggressive writer.

My definition of unofficial communication is any visual or verbal message placed in the public landscape, without the support of an official organization, for non-commercial purposes. Examples are: graffiti, "illegal" murals, defacements, stencils, stickers, train symbols, and "war-chalking." War chalking (a system of chalked graffiti that shares information about the availability of free Internet connectivity via wireless access points) is a relatively new form that relies completely on location to communicate its message.

Economic trade is usually the context for discussing international exchange. "Globalization," with its financial emphasis, makes people fear that local cultures might disappear as easily as European currency. At the same time that a handful of multinational corporations control most of the world's commercial media, unofficial communication travels around the world outside the constraints and elaborate infrastructure of commerce.

Widely regarded as transgressive, but practiced throughout the world, ubiquitous graffiti challenges rules of property ownership by claiming all space as public space. The more commercially and culturally valuable the property, the more desirable it is as an unofficial communication site.

As a pioneer graffiti writer from New York told me, "Graffiti is not always political, but the act of writing graffiti is political." Leaving a mark in public without permission is an act of personal authority, although many would say "anarchy." The act verifies the creator's existence to those who would otherwise ignore or be unaware of that existence. When graffiti-covered trains first rolled down to Manhattan—the capital of Western capitalism—from the Bronx in New York City decades ago, their messages crossed a previously inviolate boundary of space and socio-economic location.

What does location mean in a time of translocalism—when culture and meaning seem to be portable and ephemeral rather than rooted in space and time? How can a site-specific artifact change its location and retain its original significance? I wanted to see if an image of unofficial communication could be placed on a web site, in a non-location—a virtual space—and *acquire* meaning rather than losing it through disconnection from its original environment.

When I was in Paris for ISEA in 2000, I saw the most shocking piece of graffiti I had encountered after months of documentation. It was shocking, not because of its content, but its location—on a prominent Henry Moore sculpture (titled *Écoute* [listen]) in the middle of Les Halles.

Figure 1. Left image shows red graffiti tag on Henry Moore sculpture, *Écoute*, Les Halles, Paris, December 2000. Right images shows same tag on Harlem store gate, June 2001.

Seeing the huge vandalized sculpture forced me to confront my own middle-class reflexive horror at the audacity of defacing a famous sculpture in a crowded Parisian tourist area. My reaction must have been the way commuters in New York City felt in the 1970s to see a fully painted subway train for the first time. Location is the most defining attribute of a piece of graffiti. The writer wanted to prove that no location is sacred.

"O'clock 156" was the perpetrator's tag (graffiti name). I had been in Paris in December. Six months later, I was in Harlem, in New York City, photographing store gates on Malcolm X Boulevard. I had seen the "o'clock 156" tag around New York, uptown and downtown—on stickers, doorways and mailboxes. I recognized the European style "1." Could it be the same person who wrote both tags? Did writers ever appropriate someone else's tag? The writers I talked to said that using another person's tag is dangerous.

Then I saw, on the bottom of a metal store gate, the answer to the mystery! Near O'clock's name, in the same handwriting, were the words "Paris" and "Harlem." The semiotic and formal impressions of the tags were vastly different in the two locations, but it was important to the writer to identify locations of his work and verify his presence.

These unofficial artifacts constitute a media channel with a traveling transmitter—broadcasting stories about the people who are compelled to communicate and leave their marks in this way. In the graffiti culture, there are myriad web sites set up and maintained by individuals and organizations internationally. People who cannot travel can experience unofficial communication outside of their particular location. Do these web sites further dislocate an artifact from a particular cultural context or accomplish translocation—non-assimilated, culturally intact "immigration"?

According to Arjun Appadurai, author of *Modernity at Large*, "… site, situation and situatedness are of paramount importance in the globalized world in which we now live. But we need to avoid assuming that sites are the same as communities or that localities are simply geographical locations."[1]

2. The Inherent Visualization Problem

The problem in representing site-specific works on the World Wide Web is separating them from their location and, consequently, a large part of their meaning. I decided that is inevitable and unsolvable, but perhaps I could find ways to enhance the artifacts' communication to diverse audiences through information not available in the material world. As always, the challenge in new media is to articulate ideas in ways possible *only* through technological capabilities like interactivity, changeability, and non-linear navigation.

Like all new media artists, I struggle with the idea of interactivity. The word itself is an oxymoron at best in a medium that does not easily accommodate real time and space interaction.

Soliciting stories from remote "reporters" in various locations provides much of the meaningful and structural content —as well as interactivity—in the site. This symbiotic relationship with viewers requires redefining my role from a sole creator to a curator of a cultural collection. Creating the site in this way simulates a worldwide conversation (non-commercial globalization) with constantly changing participants.

I realize now that using only my own collected data would have ignored the vast resource of other people's critically important and varied "local" points of view. Rather than just a static, searchable repository of observations and records, the site itself is an additional artifact and changing part of the story. It is a living organism, taking advantage of the Web's dynamic—although limited—interactive capabilities.

Unofficial communication is anthropology, sociology, journalism, literature, art, graphic design, typography, and more. I needed to find a form accommodating to the various lenses focused on this visual and cultural phenomenon.

3. A Translocal Solution

The site's latest iteration uses matrix/maps as the main interfaces, which visualize the artifacts' conceptual and formal intersections. For example, a map of the world shows markers that indicate sites of artifacts and locations of past and current visitors to the site.

The locations of visitors are recorded in real time, as users input information that is added to a dynamically updated database. Map markers change size based on the number of artifacts or visitors. Regularly refreshing the display from the database information, the program creates new visual forms as the data changes. The matrix/maps themselves become unofficial communication, using changing data to map people's actions in the site from various locations.

To add to the site's documentation, visitors can submit photos, dates and annotations through an online form. I evaluate the information and determine its most meaningful location within the site's structure, then add it manually.

The next level of the interface maps sets of attributes, in a visual form that looks like a semantic differential chart. On one end of a line is a word such as "benign." On the other end is "angry," with "political" in the middle. Points on the line situate particular artifacts on this perceptual continuum between "benign" and "angry." Clicking on a point brings the user to another level of images that are at that cognitive "location" on this line.

My input as an artist is to construct the framework of these attribute maps and categorize the artifacts based on my observations and information received from others. I am imposing a conceptual and formal order on the thousands of images and stories collected in the site.

The technological marvel of easily rearranging discrete location-bound artifacts in relation to each other in one virtual "location" is the core of the "Unofficial Communication" site. Moving between physical and virtual space, using location and dislocation to tell different stories about the same objects is the site's basic concept. Some of the stories are journalistic and documentary in form. Some are literary and metaphoric. All are visual.

The site juxtaposes conceptual and formal structure for two reasons. The first is to encourage semiotic reading of "objective" information. Viewers can decide whether formal attributes have meaning when they are arbitrarily situated next to words with more specific connotations. The fact that a writer chose to use the color red could have semiotic meaning or red might have been the only color of paint available. A continuum showing the key locations "upper class," "middle class," and "working class/poor" is next to "yellow," "red," and "blue." The viewer has to consider the relationship between the two sets of words.

The second reason for moving between cognitive modes (literal and figurative) is to create purely formal categories that highlight an artifact's pure aesthetic and literary qualities. A specific calligraphic flourish or careful choice of word gets the attention it deserves.

Visitors access the individual artifacts by clicking into sub-menus containing larger views of the actual works, annotations, video, and multimedia stories. The structure of the site, organized as a hierarchy of maps, literally reinforces the idea that there is no one way to look at these works. At the macro level, the site points out masses of activity (online and in the physical world) by location. At the micro level, visitors can find specific details about any one piece in the site (including that essential location) reported by someone who was actually there.

The "Unofficial Communication" web site is a living, global and translocal collaborative archive that respects location while simultaneously attempting to transcend it.

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The Influence of New Technologies on Language

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Abstract

What is the impact of new (digital) technologies in the uses of language in visual arts? Different artists are researching in their work the implications of Internet and mobile technologies on language and communication. Widespread desires and longings for a global community are being questioned. Other questions arise including the way these changes influence our day-to-day life and our manners?

1. Introduction

In his book *Orality and Literacy: The Technologizing of the Word* (1982) Walter Ong explores 'orality'. Ong describes orality in terms of a primary and secondary orality as opposed to the written and printed word as the sole iteration of linguistic and narrative sophistication. Ong proposes that in the electronic era an emergence - through the use of telephone, radio and television - of secondary orality is taking place. In this paper I will argue that the work of a number of contemporary artists very clearly demonstrates this move towards a secondary orality.

2. A Short Overview of a Century of Language in Art

2.1 The first impetus for change

Since the introduction of language people have been occupied with the interpretation and organisation of language. It was not until the end of the 19th century and the beginning of the 20th that language was uncoupled from grammar and meaning. The first impetus for presenting the word as a separate entity was given by Stéphane Mallarmé in 1897. In his poem "Un coup de dés jamais n'abolira le hasard" (A throw of the dice will never abolish chance) words are separated from one another by white pages and depicted in various forms. Subsequently Filippo Marinetti, the leader of the Futurists in Italy, was the first to speak out against the structuring of language on a page. In his 1912 Manifesto he called for doing away with harmony, and he wanted to confront the reader directly with the word. Only by means of a 'typographical revolution' would the word get back the autonomy and dynamism that it deserved. At the same time, painting was making an approach to language. As early as 1911 words and sentences were being integrated into paintings. Together the expressionists, cubists and futurists liberated word and image from conventional rules. After World War I the Dadaists tried to bring to the surface the true nature of the word or letter. The thread linking all these experiments was to do away with the self-evidence of art, and casting doubt on its content and function.

2.2 Growing influence of mass media

The enormous growth of mass media meant that after World War II artists' interest in language shifted to the cultural impact and significance of language and the effects of language on communication. In the 1960s and '70s language was seen in art as an extra means for confronting viewers with themselves and with their environment. In his book *The Pleasure of Text* (1973) Roland Barthes introduced the notion of two sorts of language use: the written, readable ('readerly') text, fulfilling the reader's pattern of expectations, and the 'writerly' text that, conversely, disturbed the expectations. The opacity of text assures that sentences and words must be analyzed piece by piece, breaking the existing conventions between object and viewer. The vertical structure of writerly text demands an active role from the reader, in which he or she becomes both reader and rewriter. The attention of the artist must increasingly be focused on the whole communication process rather than making language itself into an artwork. The active vernacular was subjected to investigation in which the emphasis lay on rhetoric and tautology; through slight shifts in the letters new meanings arose, with or without ironic undertones.

2.3 The rise of feminism

This trend continued in the years that followed, and was reinforced by the rise of 'story art', which set down short statements, thoughts or events, often accompanied by photography or video. Story art was particularly popular with feminists, who in the mid-'70s were acquiring an increasingly larger voice in art. The slogan "the personal is public and political" was introduced by Luce Irigaray in 1974, and was a protest against an unequivocal conception of truth in language. One of the consequences of story art were the 'sound bites' of the 1980s and 1990s. These too involved social and political slogans, which were placed over images and/or in public space. Sound bites were however much stronger and were permeated with black, cynical humour. Their power lay primarily in the choice of the right words, which would stick in the memory. Mass culture was an important source of inspiration for many of the sound bites. Although because of this the pronouncements often appeared very non-committal, they certainly sparked reflection without offering a solution. The outcome of this process might then lead to improvements. This existential view, in which life is seen as an absurd experience, which can lead to understanding, but not necessarily to improvements in life, is still to be found in art.

2.4 From literary culture to oral culture

Responses to the language experiments at the beginning of the last century were far from uniformly positive. Critics saw the investigations not as revolutionary, but as regressive. The artworks were seen as reflections of the time before the introduction of the alphabet, when people only had spoken language which was impenetrable and inflexible. This comparison is still made today, but now in a positive sense. According to Walter J. Ong, we find ourselves in a 'second orality', the second verbal era. In his book Orality and Literacy: The Technologizing of the Word, Ong investigates the contemporary trend toward a new manner of communicating. According to him, the arrival of electronic media

has led to a change in our thinking. Interest in the written word will diminish and the spoken word will get the upper hand. He bases this primarily on the non-linear structure of an oral culture, which is also to be found in the structure of the internet, for instance. He believes the possibilities of interactivity in 'hyper-narratives' in which various pieces of text, images and/or sound fragments are connected with one another by means of links, reflects the oral tradition. According to Ong, the 'second orality' will be a period in which the principles of both oral and literary culture will coalesce.

3. Current practices

Ong wrote his book in 1982. Although computers and the Internet existed there were only few people who made full use of them. Due to ongoing developments and cheaper tools today everybody is using computers, mobile phones and of course the Internet. The popularity of chatrooms on the Internet and the speed of electronic mail have led to an enormous growth in communication, and with it, changes in the uses of language. The changes caused for a series of new vernaculars to emerge, resulting from a range of activities that take place on the Internet; from e-commerce to technical specific programming. The Short Message Service (better known as SMS or texting) is the latest development that is said to change our conventional writing. With only a limited space to type the words messages are at times very cryptic. The use of abbreviations like 'rsvp' (please reply) or 'cul' (see you later), is not new. What makes it interesting is that this language is becoming more and more popular and not just with a younger generation. Already books are available that will explain and suggest abbreviations and how to use punctuations to produce a smiley that expresses your feelings :-) (the so called emoticons). With the same kind of language is becoming quite standard in email and conversations in chat rooms it is of no surprise that the Oxford Dictionaries decided to include text message abbreviations and emoticons in their new edition. As Judy Pearsall, Publishing Manager states: "In Oxford Dictionaries we have been monitoring the phenomenal growth of text messaging with great attention: its influence is now such that we felt it was time to treat it as a legitimate part of English."

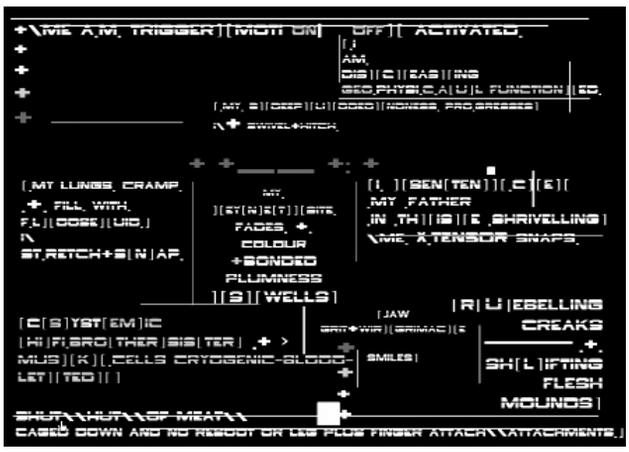
Looking back at the history of language uses in art we can see that there have always been attempts at changing the nature of language. When Ong talked about secondary orality he did not mean that written language will disappear or change in itself, but instead that language and the uses of language will be more and more structured in the lines of oral traditions. According to his view the secondary orality will be a phase in which people will use principles of both the literate and oral cultures. Thus creating a place where the spoken word adds to life and communication instead of being considered inferior. In secondary orality more and more texts will emerge that are associative, non-hierarchical organised, which are more difficult to analyse and will leave interpretation open. Ong also suggested that people in oral cultures live in close, intimate connection with their environment and with each other. Oral communities would group people together whereas reading a book or writing are individual activities. Secondary orality likewise will generate a strong group sense but will be much more global oriented. Another interesting change will be the way people interact with the spoken or written word. In print culture the newspaper would keep the news at distance, in an oral tradition people tell about happenings in person. Leading up to an experience which is subjective and communal, a site where "the listener contributes to the production of the work in performance. The listener is author, scarcely less than the performer is author" (Paul Zumthor, in Fowler 1994). Which is to say that people get a change to interact and to intervene in a discourse albeit written or spoken.

Seeing the world today it seems logical to say that indeed the changes that Ong mentioned are taking place and that we have entered a secondary orality. These observations are of course not new. As I have put forward Barthes and others before him already made the distinction between different texts and different uses of text. The same as many artists have been trying for 100 years to change language and the implications of language. By employing new technologies more and more artists reflect on the one hand the body of thought and ways of working of artists in the beginning of the last century, and on the other hand they are placing those ideas in a contemporary perspective. I like to introduce and discuss the work of three artists in more depth to show how different - and similar at the same time - these contemporary approaches can be.

Peter Frucht - iow…

The Hungarian/German artist Péter Frucht, now living in Germany where he just finished the Kunsthochschule für Medien in Cologne is fascinated by the misunderstandings that arise in communication. Influenced by his long presence in chatrooms, in his installation *iow inanalbipootv mmif with mftw ibn and cotlflgohaha isbt* Frucht captures the endless talks and conversations that take place all over the Internet. He brakes into conversations and extracts parts. When the texts enter in the virtual 3D world at first the viewer is able to read them. When someone starts mixing the texts however they become unreadable. The first selected text turns red and if the second text gets selected it merges with the previously chosen text. Immediately certain letters change and the leftovers are automatically rearranged. The result is a wave of live chat that can be mixed and linked together by the visitor. In mixing the various portions of text with each other the texts lose their original content. And by replacing certain letters Frucht alters the literal meaning of the words. But by the regrouping of the words and texts, new symmetries and new rhythms arise. The boundary between word and image can become very unclear through the various forms that are superimposed over one another. The typography functions here as an aesthetic element and as a connection among words, sentences and texts. This abstract typography and the abbreviations used are clear references to conversations in chatrooms on the Internet. What is interpreted as image and what as text depends on the visitor's capacity for abstraction. At the same time the sound is manipulated as well. By using a text-to-speech program different languages become audible. Through the interaction of the visitor the live chat can be mixed, interweaving the various languages ending up in an unintelligible flow of rhythms and melodies. With his installation Frucht shows that language is based on random rules and that it long ago lost its sense. Moreover according to Frucht communication through the Internet is bound to result in misunderstandings and miscommunications. This world of closure and confinement is also physically present in the installation

where the visitor can only peak through a small bar into the virtual 3D world and has to find its way using a cumbersome navigation tool.



mez (Mary-Anne Breeze) - m[ez]ang.elle

The Australian artist and writer mez produces e-poetry in the Internet which she herself terms *m[ez]ang.elle*. m[ez]ang.elle is a game with language, supported by sound, symbols and text, which arises from abbreviations that are current in e-mail and SMS communication. The words are altered in a manner that reflects the fundamental meaning of the word and calls up new associations. Her language is based on English and contains mathematical, programming and other language codes, in order to develop a language specific to Internet. By introducing punctuation marks reading becomes an active procedure that is more in the tradition of oral than literary culture. In addition to providing a new language inspired by new communications media, with her texts mez also wants to overturn other traditions. The primary message can often be found on the outside of the [] brackets while the insides 'hides' another meaning(s). For instance, altering the word 'postmaster' to "post[wo]ma[n]ster" not only shatters gender conventions, but at the same time places the word 'master' in an historical context and hints at words that sound similar like 'monster'. In this way a single word can receive multiple meanings, so that the text can no longer be read unambiguously. Alphabetic characters are replaced with numerals and even the punctuation marks loose their neutral value, they begin to speak an unuttered language. Like no other, mez employs the hyperstructures of the Internet and brings to the surface the underlying meanings in language. The readers are left to wonder; should they trust the inscription or the encryption?

Graham Harwood and Matthew Fuller - TextFM

Although not altering language Graham Harwood (member of Mongrel, an artists' group in the UK) and Matthew Fuller designed *TextFM* (2001) to orally intervene during radio broadcasts, seminars, in clubs etc. Harwood and Fuller took advantage of the widespread availability of mobile phones to allow people to broadcast voice messages over the public radio airwaves. Instead of using the voice they made use of the popular texting methods. The user can send a normal text message to a central phone number, where a computer captures it. The computer converts the message to speech using text-to-speech software and the spoken text is then send to a transmitter and broadcaster over a FM radio frequency. The user can also include several optional codes specifying the language the message must be in, which of the ten voices to use, the pitch of the voice, and the speed at which the text must be read. Their first interest in this project came from looking at hidden possibilities that exist in different media technologies, after mobilising these they mixed them with others. The project is also about finding out what potential cultures of communication exist in the public space. What will people do when they get the opportunity to interact or manipulate an existing system, like a radio transmission, a symposium or a club night. It is a system that is using language as data, and then allowing people to interrupt that. Because they use synthesised voices the sounds tend to be very mechanical. Instead of rejecting these sounds people started using the system's incapacity to produce simple beat structures or get the voices to sing by using certain mixes of characters.

4. ITFA

Looking at the projects that I have addressed and others that are being presented at the moment on the Internet and outside of the Internet clearly show that a shift into a secondary orality has taken place. Maybe our language will not change as dramatically as mez puts forward in her constructed m[ez]ang.elle or as the Futurist would have wanted, but uses of languages like mez' or projects like TextFM are altering our perception of language and in the end will change communication patterns. Concluded can be said that new media once again reinforce old ones but at the same are transforming them. And while looking at the increasing number of computer and mobile phone users a definite change might be here to stay.

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The (True) Death of the Avant-Garde

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Abstract

The goal of this paper is twofold. First, it asks, can digital media be avant-garde (or neo, or post-avant-garde)? Second, it asks, why do we, practitioners, theorists and critics not only of new media but of all art practices, continue to value and aspire to be deserving of the title avant-garde?

The (True) Death of the Avant-Garde

Recent discourse often positions new media as hailing a time of a new avant-garde. Within traditional art history and criticism, a range of theoretical positions has been elaborated for many years on the death of the avant-garde, the possibility of a new avant-garde, or potential delineations for a neo- or post-avant-garde. Writers such as Peter Bürger, Renato Poggioli, Hal Foster, and Clement Greenberg[1] have theorized the history and practice of the avant-garde. One of the most important essays decrying the end of the avant-garde is Rosalind Krauss's piece, "The Originality of the Avant-Garde and Other Modernist Myths."[2] Many, many other articles, books and works can be found, both within art history and literary criticism, which pursue these topics. Regardless of the source, the debates have been in place for a long time, yet in discussions about digital media arts, the term continues to be recycled and valorized. The goal of this paper is twofold. First it asks, can digital media be avant-garde (or neo, or post-avant-garde)? Second, it asks what I believe to be a far more interesting question: why do we, practitioners, theorists and critics not only of digital media but of all art practices, continue to value and aspire to being deserving of the title avant-garde?[3]

In order to ask the first question, about the relationship of digital media arts to the avant-garde, both terms ("digital media arts" and "avant-garde") must be defined. Digital media is a term that is becoming increasingly obsolete, as computers become more and more a part of everyday life. As artists in a range of disciplines use computers at some point in their process or production, which media will be deemed "digital"? The term "new media" certainly is not better, because the whole notion of "newness" has been historically problematized, and this will largely be the issue at stake in this paper.[4] However, while the name may be a matter of dispute, and while it might be increasingly obsolete to even discuss digital media, at this point in time there certainly is a medium here to be discussed. I define a medium as a set of practices around which a discursive body of knowledge has been produced. These practices are manifest through some form of material support. In the case of digital media arts, they are germane to one or more of the following conditions: their very inception relies on processed data of some sort, their exhibition relies on a data processing system (or systems), their production occurs within a networked environment, or their distribution is dependent on the network. *What all of these conditions have in common is that the work is in some way reducible to the binary code that forms it as information*. Therefore, in some sense, the material support in the case of these works is not material, but immaterial. It is precisely because the code itself is immaterial—both infinitely reproducible, as well as consistent across all of its material forms (whether it is still imagery, text, sound or video, it is always ones and zeros)—that it can be transmitted or displayed in the digital environment and so open up possibilities for its dissemination that have not been previously available.

Having attempted to define digital media, I turn to the more formidable task of defining "avant-garde." On first glance, this may seem obvious and simple. After all, "avant-garde" is in the dictionary, defined roughly as: a group active in the invention and application of new techniques in a given field, especially in the arts. However, to unpack both this simple definition, as well as the myriad applications of this term relative to artistic production, is to uncover a complex idiom that is not often agreed upon. This may seem a straight issue of semantics, how the term is used and whether it is applicable today may only be a matter of naming. Post-this and neo-that are now tossed around easily, without serious consideration for what such titles infer. I will argue that, more than just semantics, the very ideas behind the original, historic avant-garde obviate the use of the term in any ongoing fashion—post, neo, or otherwise.

The phrase derives from the military model of a "forward guard" which would move ahead of the troops in order to ascertain a situation, or to test the waters. This phrase was picked up on by Clement Greenberg, and already in his choice we see evidence of a teleological epistemology that pertains to modernism. This way of thinking promotes the idea of art as a series of works whose main purpose is to challenge those that preceded it, advancing in the name of progress towards some unnamable goal. Additionally, it is possible to locate within this definition a metaphor of the arts as outside of culture, as operating in relation to culture and daily life as an army with a mission, a battle to be waged, rather than as a part of culture, from within culture. This was certainly the case for the historic avant-garde, which in effect did achieve a kind of coup. These artist knowingly sought a forum for their work outside of the academy and outside of official culture. These breaks were indeed radical in relation to prior practice, owing to the fact that they paved the way for a politically engaged approach to art which was to reappear much later. This methodology formed the beginnings of Modernism, but Modernism would later shift towards an idea of the art object as autonomous, which ultimately became the notion of "art for art's sake."

This shift is evident in Greenberg's opposition of the avant-garde to kitsch, which he elaborates in "Avant-Garde and Kitsch" (1939), and Judith Russi Kirschner shows the ways in which late Greenbergian ideas incorporate and undermine his own earlier ideas of the role of art in culture. For Kirschner, there are two Greenbergs:

> the early pre-50s leftist intellectual committed to negation as a way out of capitalist domination and the late fifties Greenberg whose ideas of negation, transformed into reductivist modernism, become the foundation for a hegemony of the autonomous—which in turn was politicized because of its apolitical nature.[5]

Hal Foster, on the other hand, views the avant-garde as operating on a continuum not only throughout the history of modernism, but into postmodernism in the form of a neo-avant-garde. In his essay, "What's Neo about the Neo-Avant-Garde?", he begins with an operational account of *neos* and *posts*:

> How to tell the difference between a return of an archaic form of art that bolsters conservative tendencies in the present and a return to a lost model of art made in order to displace customary ways of working? Or, in the register of history, how to tell the difference between a revisionist account written in support of the cultural status quo and a genealogical account that seeks to challenge it?[6]

Foster goes on in his essay to discuss the ways in which certain postmodern artists do indeed constitute a neo-avant-garde. His argues that many of the strategies employed by artists such as Hans Haacke, Daniel Buren, Silvia Kolbowski and Louise Lawler rely on avant-garde ideas. While I agree wholly that these artists share some of the ideals of the historical avant-garde, I believe it is precisely because of this commonality that they cannot be defined as a neo-avant-garde (this will be discussed at length later in this paper).

I define the Avant-garde as an historical movement with specific aims, a beginning and an endpoint in time, and a set of conditions *that are no longer available for artistic production at this time*. Further, I will argue that this is not simply a matter of naming; that the very qualifications for the status of avant-garde works are, as stated previously, no longer possible. Now, even to define the beginning and end of this historically located movement, or to gather up its aims under one definition, is not easy and can certainly be challenged. For the purposes of this essay, and in a desire not to attempt to re-invent the wheel (nor to get bogged down in the history of the avant-garde, that goal not being the aim of this paper), I rely on Peter Bürger's definition, with modifications owing to Rosalind Krauss and Hal Foster. For Bürger, an avant-garde work would exhibit some of the following tendencies: newness, chance, allegory, or montage. Key to all avant-garde works was their attempt to integrate art with daily life. I will add to that, the work must attempt to create a rupture, or radical break, from practices that came before it; and, the work must perform some aspect of (what we now call) institutional critique.

In the period between the two World Wars, the art world as an institution was coming clearly into view, and therefore became available as an object of critique. Simultaneously, artists sought a means through their production to engage in a political discussion around the burgeoning forces of communism and fascism. Walter Benjamin summarized this desire well in "The Work of Art in the Age of Mechanical Reproduction," an essay quoted more often now than when it was originally written in 1936.[7] Benjamin put forward the idea that, in making war beautiful, fascism seeks to aestheticize politics, and that communism responds by politicizing aesthetics. This response to fascism was daring and revolutionary at that time. The historical Avant-garde functioned in a time when innovation, shock and extreme gestures were valued in artistic production above all else as a means to present a challenge to the status quo. At that time, the most extreme gesture possible was to include everyday life into works of art and to engage politics within the aesthetic context.

Krauss, in her essay "The Originality of the Avant-Garde...," writes of the opposition between the two terms, originality and repetition. While originality has been, in her opinion, a myth upon which modernist practice is founded, the postmodern is founded on repetition, evidenced in the name itself. As she describes in relation to Sherrie Levine's work, which photographically re-presents well-known art historical images,

> Because of the critical attack it launches on the tradition that precedes it, we might want to see the move made in Levine's work as yet another step in the forward march of the avant-garde. But this would be mistaken. In deconstructing the sister notions of origin and originality, postmodernism establishes a schism between itself and the conceptual domain of the avant-garde, looking back at it from across a gulf that in turn establishes a historical divide. The historical period that the avant-garde shared with modernism is over.[8]

Postmodernism is founded on a sense of repetition, derived in part from the condition of "looking back." Digital media are inherently repetitive, and therefore exist entirely within the realm of postmodernism and after and therefore are neither avant-garde nor neo-avant-garde.

Based on the structural dichotomy that Krauss establishes between originality and repetition, it is repetition which is fundamental to the material sense of digital works, just as Krauss finds ultimately that repetition was fundamental to those historical works which claimed originality. Central to Krauss' argument is her example of the grid. For Krauss, the grid seems to be a clean surface, a cleared out playing field, and yet, "The absolute stasis of the grid, its lack of hierarchy, of center, of inflection, emphasizes not only its anti-referential character but—more importantly—its hostility to narrative."[9] Lack of hierarchy and nonlinearity are qualities most often touted as providing utopian possibilities within the networked environment for radically new forms of production. Yet, as Krauss shows, those qualities are drawn precisely from the inherent repetition that makes up the grid. So too, the matrix of on/off, pixel-by-pixel, translation into ASCII which makes up the digital work is based, at its most fundamental level, on repetition.

The notion of an inherently reproducible work dates, of course, to Benjamin's aforementioned essay "The Work of Art in the Age of Mechanical Reproduction." For Benjamin, copies have always existed in artistic practice. Students studied by producing replicas of famous artworks, and processes of mechanical reproduction date back to the Greeks' use of founding and stamping from casts. Krauss also begins with sculpture. In her case she writes of Rodin, and shows how even in his oeuvre, each of his works was not a unique piece but part of a play of casts, repeated figures, and commissioned rights to reproducibility that would outlive him well into the Twentieth Century. The apotheosis of these qualities came much later, though, in the form of the photograph, which could infinitely reproduce an image. This invention challenged artistic production's obsession with authenticity, and thus for Benjamin provided the first real opportunity for art to free itself from its residual location as ritual or cult

object, allowing it to move on to the business of everyday life, that is, politics.

Digital media takes all of these ideas a step further. While the photograph seems to offer a completely reproducible image, there remains the problem of the negative, which is, in and of itself, a kind of original (though in some sense, the negative is already a copy of the positive it re-presents). This remaining artifact is finally, completely undone by the digital work. For truly the first time, no copy can ever be considered more authentic than another. (Yet, the cult of originality persists, as evidenced by bodies of digital prints which are numbered in editions, as if they have the lithographic quality of degradation from beginning to end of run.) So, just as Krauss claimed that the "grid is extremely difficult to use in the service of invention,"[10] the matrix that is the basis for all digital works is impervious to claims of invention as well. While I can claim that certain *aspects* of reproducibility are *particular* to digital media, this does not at all imply that these media are themselves new. This does not render these media uninteresting, nor does it deny their potential to further advance the goals of many practitioners. It means, rather, that what is most interesting about them is not what makes them unique, but the conditions that arise as a result of their paricularities.

We are no longer in an historical time in which it is possible to pursue the qualities of newness that the Avant-garde sought (but, as Krauss goes to great effort to point out, those projects were never as new or original as they claimed to be). At this point in time, any strategies we employ that are antecedent to these old practices must acknowledge them as their legacy. As Foster states, artists of our time are now aware of the aims of the avant-garde to the extent that work which continues with its aims—i.e. an engagement with political discourse, a challenge to the autonomy of the art object, etc.—is referencing this historical work, and is therefore repetitive:

> ...Most of these recoveries were self-aware: often trained in academic programs, many artists in the late 1950s and early 1960s studied prewar avant-gardes with a theoretical rigor new to this generation; and some began to practice as critics in ways quite distinct form modernist-oracular precedents... In the United States this historical awareness was further complicated by the reception of the avant-garde through the very institution that it often attacked.[11]

Many digital artists work in ways which attempt to challenge the established art world, using tools and means which are new to artistic production. This does not make the work avant-garde, for it is always done with an awareness of its earlier models. Claims to avant-garde status are made on behalf of a range of practices within what we might call digital or new media. One example is that of the works being done by the open source communities, which in very interesting and deft ways challenge notions of authorship (and in turn originality). The open source community seeks to write software, and produce artworks from this software (or software as artworks), such that the source code behind the work is available to all for appropriation, modification, or alteration. Through this work, one of the great ideals of poststructuralism is explored: that of the death of the author. Both Michel Foucault and Roland Barthes explored this idea (Foucault in his essay "What is an Author?" and Barthes in his essay "The Death of the Author"), which posits a shift in the production of meaning from being located in the voice of the author, to being in the act of reception. As Barthes states, the death of the author brings about the birth of the reader.[12] Once the production of meaning is opened up as a play produced by the audience which receives the work, authenticity is further disarmed. Thus, an undermining of authorship proffers yet another blow to claims of originality.

In the case of digital works, this sense of undermining, as well as any kinds of institutional critique, are always produced from within the institutions and corporations that they critique, both in their inception and their distribution. This undermining must take place from within, that is, one might produce a work for the web that is critical of Microsoft, but if the work is intended for wide distribution, it will most likely be seen via a Microsoft operating system, and quite possibly within the Microsoft browser. The network itself, upon which the work relies, was itself initially developed by the military-industrial complex. Even to turn on a piece of hardware or to boot software means that one is relying on products which are profit-motivated and implicated in late mult-national capitalism. The option of distribution through the art world offers no way out either. While one claim of the avant-garde was to make a space for the production of works outside of such institutions as the museum or the academy, over time the art world valorized and heroicized this very work, to the point where museums now actively seek what they deem to be "the next avant-garde." *As soon as the institution seeks the next avant-garde work, avant-gardeness is, de facto, no longer possible.*

Works which attempt to challenge the academy, or critique the institution, always struggles with the issue of institutionalization. What if we are at a point where we can accept that, and still find a way to make work that is critical of these establishments, but from within them? Again, I am not trying to claim that these works cannot be successful, or that production has lost its capacity for real social critique or an ability to actively engage political issues. Instead I am asking, if we accept that we will be working from within these institutions, and cease to try and make claims for the newness or originality of our production, might we not be more productive? Open source works can still have efficacy as critiques of corporations, even if we experience them from within Netscape or Internet Explorer. And while the museum might be embracing, and therefore institutionalizing, other digital works, their political and/or anti-art world institution messages are still available to their audiences.

Where does this leave us? Not nearly in the quandary one might think, if one were to delete the phrase avant-garde from all discussions of digital media. In fact, I believe that digital media works become more interesting when we stop trying to fit them into the mold of the avant-garde, and see them rather as extensions of the aims of a range of preceding and contemporaneous art movements, as broadly inclusive as conceptual art, dada, Surrealism, institutional critique, feminist practice, and more. As Kirschner states:

> In the openended discourse, the fluid undecidability of poststructuralism and postmodernism, one does not require an avant-garde, when all-inclusiveness is heralded and confiscation, lack of originality touted, the avant-garde becomes a quaint anachronism.[13]

The continued valorization of originality as a term, even in the face of understanding that it is not so separate from repetition as we would have believed, grows out of our continued anxiety about the copy. Contemporary media critics have come to terms with, and indeed finally embraced,

ideas dating back to Benjamin about the role of art in culture. Yet, the essay is often misread, such that Benjamin is presumed to bemoan the art object's loss of aura in the face of mechanical reproduction. To the contrary, for Benjamin, this loss opens up exciting possibilities for the copy. He sees the applications of repetition, and the decline of the pursuit of newness as the ultimate goal of a work of art, as creating new ways for art to engage with its audience. Yet, the idea of originality persists. When a digital media artist or critic claims that a work is avant-garde, that discourse is denying the work the very factors that make it, not unique, but locatable within its own discourse. Krauss asks, "What would it look like not to repress the concept of the copy? What would it look like to produce a work that acted out the discourse of reproductions without originals?"[14]

I believe that much of the work being produced today within digital media has come closer than ever before to achieving these aims and exemplifying these ideas. Despite much theorizing which continues to make claims for the originality, newness, or avant-garde status of these works, the work often belies this theorizing and operates as it is, from within the culture of the copy. Hopefully, from within this discourse that understands the potential that reproducibility can offer, we can finally put to bed the quest for originality and announce, yet again but irrevocably, the true death of the avant-garde.

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[2] Rosalind Krauss, *The Originality of the Avant-Garde and Other Modernist Myths* (Cambridge, Massachusetts: MIT Press, 1985).

[3] Many thanks to my colleague Dr. T. J. Demos for his insightful comments on this paper and assistance in understanding the various theories of the avant-garde.

[4] My preference is the term "digital media arts," because it connotes a relationship to the field of media studies while indicating the use of binary code. However, as none of these terms feels precise, I use all names interchangeably in order to express this ambivalence.

[5] Judith Russi Kirschner, "The Possibility of an Avant-Garde," *Formations* vol 2.2 (Fall 1985), p. 84.

[6] Hal Foster, "What's Neo about the Neo-Avant-Garde?," *October* 70 (Fall 1994), p. 5.

[7] Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," *Illuminations*, Ed. and Introduction by Hannah Arendt (New York: Harcourt, Brace & World, 1968).

[8] Krauss, p. 170.

[9] Krauss, p. 158.

[10] Krauss, p. 160.

[11] Foster, p. 10.

[12] Michel Foucault, "What is an Author?," *The Foucault Reader*, ed. Paul Rabinow (New York: Penguin Books, 1984); and Roland Barthes, "The Death of the Author," *Image, Music, Text* (Noonday Press, 1978).

[13] Kirschner, p. 88.

[14] Krauss, p. 168.

The Final Fantasy: Ethic in Cyberspace in Psychoanalysis Terms

Hongjohn Lin, Ph.D.

Abstract

The paper discusses the relation of technology and ethics in the cyberspace. Cyberspace, as it may seem today, become a new battle ground of contested ideas and thoughts, but we no longer bear the vision that cyberspace is the site of subversion as properly noted by American scholar Danna Haraway in her A Cyborg manifesto. The author has described the function of fantasy, the ordering of desire, as the sheer force in pair them together by exemplifying the TV commercial of cellule phone. Using Lacanian methodology, the author has identified the process of the fantasy operated in the symbolic order of relation of subject and object petit a—whatever close the subject can attain the object, there is still a distance between them. It would be better to be seen this perfect pair, technology and humanity, is a simulacrum that the holistic picture of it is impaired, therefore more desirable than ever. Taking Tamnagochi as a point of entry, the author offers a critique to the over optimism of cyberspace and returns to psychoanalysis terms to examine what follows:

1. From Interactivity to interpassivity, how a subject inscribe itself in the symbolic network of desire.
2. How can technology be the big Other of today's culture?
3 *Humanity is represented in cyberspace in the form of fantasy*.

By way of a simple reflections on the past decade of fast growing community in cyberspace, we find that what we have been aware as ethics is subject to change, and have compelled to accept the status quo of technology leading our everyday life whether we are voluntary or not. For forming and reforming of new community based on newly founded technological relations-- be they social, cultural, or economic-- have shaken the basis of ethics, anthrocentrism that rooted in Western philosophy. Precisely because of a community invoking another set of human interactions that need to be revalidated in ethics, the standard of ethic thus becomes a relative term. Therefore "what is right," an age-old ethical question, becomes nullified. It is not even mentioned that the contested power relations in cyberspace where communication is ordered by those who have social and economic, political, and even military advantage. Ethics, proposed by American positivist John Dewey, is based on its relativity on democratic society. Yet paradoxically enough, his idea still hold ethic(together with morality) as priori which is contradicted to the current situation of technology constantly growing, expanding , regrouping, and deploying its network, as in modern life most man can feel the idea of technology has more or less become the capitalized "T" that almost goes along with the notion of Truth or the God, those which hold the idea of transcendental value. But can the notion of Technology be transcendental?

The answer can be found in a television commercial of Nokia cellule phone, in which the opening shot shows a image of an Asian man after his receiving of a cellule phone call he starts running out from his office and then taking his shirt off. What has been sequenced are a list of surrealistic images: a marriage in the bus, a meditation on the hood of a smoking car, erotic dancing in the elevator, and writing in the back of a female body. At the end the hero jumps into water and the picture dissolved into black letters: "Technology Comes From Humanity". Where is Humanity? Does any of these images show any sign of humanity? To the opposite the commercial precisely shows how technology begets inhumanity, a paranoiac hysteria and thereafter a symptom of hallucination, which costs this poor Asian man running out of his secure office job and making a futile attempt to regain his reason by jumping to water. We have been quite familiar with the operation of commercials, which always aims at desire in order to promote products. In addition, we are also long aware of how technology has destroyed humanity in war, in ecological and environmental condition, bio-chemical industry, and etc.. But neither of these awareness can stop the role of the big Other (*Autre*) belongs to Technology. According to Jacques Lacan, the big Other designate radical alterity because it cannot be assimilated through imaginary identification and therefore the Big Other equates to language, law, and God, i.e. the impossibility. Henceforth, the big Other is in the order of symbolic. Technology is the locus of how we orient the world to which we cannot step beyond.

The psychological condition of the hero, hysteria, can be a result of anxiety that has been caused by a strong fantasy of trying put together humanity and technology. In this case, the representation of Technology, cellule phone, become the object to desire, to which Lacan has used the term *object petit a* to designate the object that "you can never get what you want." In 1957, Lacan proposed the concept of object petit a, which is the imagination project of the subject and also the extension of the real body of that subject. Returning to the commercial, why does this hero need to hastily escape from his office and never return? Is this escaping from the interiority a symptom of hallucination? We know that the mad people can never escape from the madness-- by escaping, he only shows his madness, or better yet, escaping is the evidence of madness. The reason for such escape is let unsaid as like the Big other always lurk behind the scene.

Tamagochi, a Japanese invented electronic toy, can be a suitable culture sign of this kind of symbolizing process, for the operation of the toy has detoured from the traditional mode of playthings, e.g. teddy bears, matchbox cars, battered operated robots, and those which bear with formal resemblance to the real things. A small plastic flat container with an LCD monitor cannot be what we has been acknowledged about eggs, hens, and any other concepts that we can related to chicken. In other words, the toy get rid of the aesthetic pleasure and formal equivalence, and takes the procession of simulacrum, the copy that bears without any relation to the real subject, precisely because in tamagochi, the object offers the rhetoric apparatus of self-commentary to regulate the trajectory of desire as noted by Slavoj Zizek. Thus the notion of interactivity indeed interpassively controlled the process of symbolification and regulates desire of players.

In cyberspace as well as in the contemporary practice of art, the notion of interactivity cannot be over emphasized. The reason can be seen in that to form a new community new set of ethics needs to be evoked, and therefore, its power structure. Danna Haraway has proposed in her A Cyborg Manifesto that to be the radical other can be the option in resisting the inhumanity of technology development by turning fantasy against Fantasy. The points of a stack is to examine technological advance has become one of our collective fantasy in our times, and how we react upon it….

Reference

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Design of Ambient Intelligence

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Abstract

Ambient Intelligence is a new paradigm for the design of hybrid spaces. The expansion of physical environments for work and living into the non-physical realms leads to hybrid spaces and environments for work and living. To create a pleasing and supportive environment for the individual as well as the various ways of human groupings and eventually societies ambient intelligence is introduced. This contribution will centre around the development of an understanding of new process and space design concepts for hybrid spaces loaded with and enlivened through ambient intelligence.

1. Ubiquitous Computing

Computer science has developed the notion of ubiquitous computing to describe environments in which it would be possible to have unobtrusive and calm access to any source of information at any place at any point in time by any person. Ubiquitous computing [1], is a computer and subsequently a space paradigm which is now emerging. The 'disappearing' computer technology becomes virtually invisible although omnipresent in our lives. Instead of having personalised computer devices, the technologies we use will be embedded everywhere in our environments. These worlds can be conceived as huge distributed networks itselves consisting of thousands of interconnected embedded systems that surround users and satisfy some of their needs for information, communication, navigation, and entertainment. Computing technology is embedded everywhere into the built environments, clothes of persons and eventually even the people themselves in such a way as to be unobtrusive.

2. Towards Hybrid Spaces

Space concepts for the physical have been developed ever since mankind started to build shelter. Space concepts for the non-physical of the digital started when the first computers were built. It emerged as topic of vivid interest when computational hard- and software performance allowed more advanced computational process and space concepts. This led to virtual space simulations of first a static nature and later on even to virtual spaces in motion. The hybrid space concept now transgresses the boundaries of the physical towards the non-physical realms resulting in a combination and eventually fusion (in various degrees) of the physical and the non-physical into new open territories which still need to be defined and designed.

2.1 Physical Spaces

Architecture as a profession used to deal with the creation of man made spaces in the form of buildings and spaces of a material built substance. Built artefacts and spaces of a material presence endure over a certain period of time a relative permanence in space and time. Architecture as built artefacts of various scales then arises as a vivid and strong manifestation of human cultures within the physical realm. These traditional architectural spaces and surroundings still and will provide shelter and enclosure, giving space for inhabitation including cultures and various use scenarios. These spaces we call physical spaces incorporated within the physical realm.

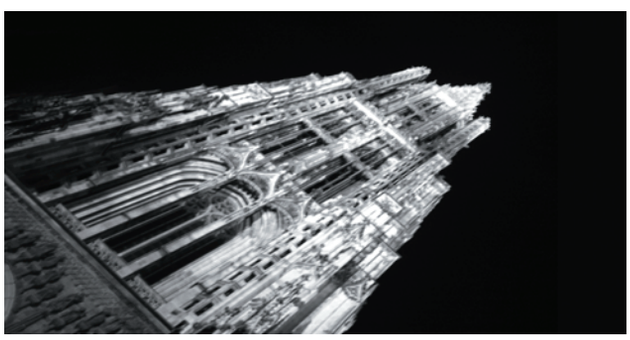

Figure 1: The physical as space of building and culture

2.2 Non-Physical Spaces

The non-physical distinguishes from the physical not as an opposition but only as something which differs from the physical in its parameters. These other spaces span the realm of the immaterial, the digital, the media, the cyberspace, the information and the knowledge territories. There qualities differ from the physical in that respect as their nature is dynamic. Their state is one of being in flux. Instead of a relative persistence these spaces are in general of a short persistence and life span due to frequent computer hard and software changes. Their building substance is neither stone, brick, mortar, concrete nor glass nor but immateriality. What started as a simple binary code transporting simple commands and simple messages is on the way to develop into complex four dimensional formations of information combined with spaces resulting in information scenarios and spaces. These spaces we name the non-physical spaces located within the non-physical realm.

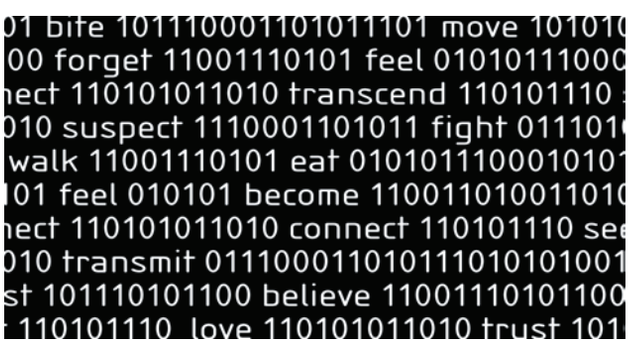

Figure 2: The non-physical as space of digital binary information

2.3 Hybrid Spaces

On these two kind of spaces – the physical and the non-physical - which can be looked at as a basis a third is newly build. These kind of spaces combining the physical with the non-physical we call hybrid. This path towards a possible feasible combination takes place in a direction towards fusion and merge. The result are spaces where clear boundaries between spaces and processes within these spaces increasingly blur as spaces and processes in the physical merge with spaces and processes in the non-physical. As a result we approach hybrid environments which consist of hybrid spaces in which hybrid work and living activities and processes take place. We set out to crossbreed physical space and its parameters with non-physical space and its parameters and technology with space. As in most cases hybrids are the result of human intervention so it is in our case. The result we call hybrid. In this sense we want to achieve an environment designed to incorporate specific desired traits through a hybridisation process. In this way we want to customise spaces for desired purposes. As a result physical environments find their extension in the non-physical environments of the digital world. In combination the physical and the non-physical environments lead to new hybrid spaces and environments.

Figure 3: Towards hybrid spaces – towards new territories

3. Ambient Intelligence

Following our approach to hybrid spaces we want to introduce ambient intelligence as a positive merger between space, technology and people within space. We look at hybrid spaces as a combination of physical space with non-physical space enabled through digital technology as in itself a neutral concept which can be developed in positive or in negative directions. As we are interested to shape our present and future surroundings in a positive manner we focus on space / technology configurations which support human ways of living. This positive interpretation of a hybrid scenario we call the concept of ambient intelligence. Ambient intelligence incorporates in itself the two trends of 'ubiquitous computing' and 'social user interfaces'. In this vision of an ambient intelligence' people will be surrounded by intelligent and intuitive interfaces embedded in everyday objects at numerous places around us. These environments will recognise and respond to the presence of individuals in an invisible way. Intelligence then refers to the fact that the digital surrounding is able to analyse context, adapt itself to the people that live in it, learn from their behaviour and eventually recognise as well as show emotion. This kind of awareness refers to the ability of the systems to locate and recognise objects and people, and their intentions. In this state we can talk of ambient intelligence as (almost) a being in itself which reacts to its inhabitants in the first place but in a second step (almost) acts in itself. The challenge of really adding ambient intelligence to hybrid environments lies in the way how the embedded systems learn and keep up to date with the needs of the user by itselves. Because making a key able to compute and communicate does not make it intelligent just like that.

3.1 Interactions with Ambient Intelligence

Interactions between people and the ambient intelligence has to be a calm and unobtrusive not threatening but supportive scenario. Location positioning systems for example can enable smart mobile and ubiquitous computing support. But what allows an enhanced support in a development towards more sophisticated human hybrid work and living activities can also be a threat for human privacy and integrity. The personalized tracking of movements and activities allows profiles which in a positive scenario can be used for the optimization of technological support for human activities. In a negative scenario we might fear the system(s) trying to take over control much like HAL in Stanley Kubrick's film '2001. A Space Odyssey' (1968). This has to be avoided through technological and social rules and regulations which will not be easy to define and even more difficult to secure. Data abuse in this context is a violation which needs to be considered very seriously.

4. Implications for Hyperrealities in Hybrid Spaces

In opposite to Jean Baudrillard's [2] definition of 'hyperreality' where the physical reality is substituted by the virtual to create a hyperreality, we think of coming new hyperrealities as a mixture of physical and non-physical scenarios and events where the presence of things and events have counterparts in the physical and non-physical realm. These hyperrealities in hybrid spaces then are kind of new scenarios with partitions in the physical linked to or refered to partitions in the non-physical. Both spheres eventually will influence each other in complex interaction patterns. In these scenarios the transitional spaces and transitional states of being then become new territories to explore. These are the territories in which James G. Ballard [3] and Philip K. Dick [4] showed interest. Both authors wrote about constitutions of hybrid worlds where people try to explore the unknown frontiers towards these new realms. Ambient intelligence shall support access to hyperrealities and enable people to manifest their personalities in these fused hybrid spaces. The shortening of the distance between imagination and reality and the fusion between fiction and fact will then create the possibilities of visions where a fusion of external and internal mental worlds can result in entirely new scenarios.
Having installed ambient intelligence in hybrid spaces we will encounter the shifting of perception and experiences for people incorporated within these hybrid systems. With our bodily presence and standpoint we will persist in the physical but our visual and audio perceptions as well as our imagined spaces can expand into other realms. We see ambient intelligence provoking a complex fusion of physical and non-physical spaces to hybrids. These hybrids are enabled through technology. Social rules and ways of conduct have to be expanded and adapted to this new set of spaces and technologies to create pleasing hyperrealities.

Images

[1] [2] [3] Michael Willadt, imagination(s)ma(s)chine international with Marcus Merz, m.adverts

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Visual Information Design of Digital Picture Cards: A Computer-based Therapy for Aphasics

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Abstract

With the advent of artificial intelligence and its applications to all aspects of daily life, an old saying that a pictures is worth of a thousand words will indeed have a broader and deeper impact on human quality of life, especially to those who have lost partial or total ability to articulate ideas in any form. How can people with aphasics acquire language skills? If aphasics do not process either partial or total ability to verbalize their ideas in words, how can hey study language? Language is generally defined as the aspect of human behaviour that involves the use of vocal sounds in meaningful patterns and, when they exist, corresponding with written symbols to form, express, and communicate thoughts and feelings.

In this paper, we have focused our research on the picture cards for current computer-based therapy. On the basis of data used and collected, we began with an assumption that pre-conditions of digital picture cards were the essential step to the development of the language training software for aphasics. We proceeded to explore the impact of the visual information design of digital picture cards on those who have varying degrees of aphasia.

1. Introduction

It has been estimated that about one million people in the United States of America and fifty thousand people in Japan suffer of aphasia [1]. Aphasia is an impairment of language, which affects the production, or comprehension of speech and the ability to read or write. The majority of aphasics are the victims of stroke or accidents. Although they cannot speak, most of them want to, depending of the degree of aphasia [2].

The research conducted by Goldstein has discouraged teaching aphasic patients to speak by using language material for elementary school children, or deaf and mute patients [3]. In our own study, we also found that those aphasics who had partially recovered their use of language were uncomfortable learning even the simplest parts of speech from speech therapists (ST) who were usually younger the patients were.

As of today, we have identified hundreds of aphasia rehabilitation materials in have categorized the materials into five groups. They are: workbooks, cassette tapes, paper picture cards, real things, and computer based therapy. All these materials can be used individually or collectively. Of all the materials, computer-based therapy is considered one of the notable tools among the ST, medical specialists, and recovered aphasia patients. In this paper, we have focused our research on the picture cards for current computer-based therapy.

2. Computer-based Therapy

The computer-based therapies actively studied and designed from 1980's when computers were imported to the hospitals and the rehabilitation centers. Review of the literature has indicated the computer-based therapies can effectively assist the language learning process among aphasia patients and was attractive part of the researchers and therapists. However, Robertson (1990) observed that computer-based therapies lacked theoretical underpinning, and that quality of the software and the design were often poor [4].

Although there are many more variety of computer-based therapeutic approaches to and systems for the treatment of aphasics, one can not find significant changes in the field of visual information design of digital picture cards. A Computerized Visual Communication Systems (C-VIC) using icon symbols (1999) was developed as an alternative communication system and was used as a therapeutic tool for those who suffer severe degree of aphasia. The icon vocabulary of PCS (Picture Communication Symbols) was organized hierarchically representing different lexical categories [5]. Another example is called PICDIC−2 (2002), which is constructed in three stages by using PIC symbols[1]. Those stages are: Selection of symbols, discriminations training and communication training [6][7]. C-VIC and PICDIC−2 are both used in black and white, non-animated digital picture cards, similar to some of the latest computer-based therapeutic applications normally do.

With limitations to the communication of ideas and thoughts in verbal form, aphasics will have to communicate and study a language by means of non-verbal models. These include signs or pictures, which need to blend with both analogical and digital codes if the desire to acquire a language or language or languages [8]. Therefore, we believe that the picture cards play and important role in the language-training program and that these cards can be designed to be more entertaining, functional and useful.

[1] Pictogram Ideogram Communication (PIC) symbols are one of the research fields of AAC (Augmentative and Alternative Communication) and this research is developed at ASHA (The American Speech-Language-Hearing Association) Canada, Europe, America take a leading part of this research.

3. Possibilities of Digital Picture Cards

The traditional approach to speech language pathology is to test with an attempt to develop a re-teaching syntax without any regard to pragmatics. An aphasic is typically asked to look at a picture and to describe what he or she sees in the picture. Recent research in the field, however, seems to point out that the best opportunity in the process of developing a re-teaching syntax is to create related situations or relevant contexts in which it is natural to use a particular syntactic form and to incorporate this form in an appropriate context to assist aphasics to improve their speaking fluency.

Picture cards, like signs, are designed for a communication and therapy materials. During this research, we conducted interviews with medical doctors (MD's), ST's, and those who had recovered from aphasia in order to find out more about what they need in order to facilitate the treatment of aphasia. We came to a three-point elicitation of materials for the future development of Digital Picture Cards.

Universality and Abstract: Pictures, like signs, do not exist in isolation. They are always exists within overall systems, or codes, that determine their meanings and uses. Also, pictures are universally obtainable, but additional visual information is often required because cultural differences may have different connotative meanings associated with the pictures, especially when the pictures connote festivals, foods, and national holidays [9]. As it was previously mentioned C-VIC and PICDIC-2 is a communication tool for those who have difficulties to verbally communicate. Pictorial signs are simple and they carry abstract images which are easier to identify. However simplicity of picture cards and their distractive characteristics of age and culture boundary free also make it difficult for the picture cards to be empathy-focused. Menn showed that the more "animated" an undergore was, the more likely the respondent used a syntactic form or an emotional expression to make it [10].

Added Value: Speech therapists often include the use of picture cards when they make efforts to encourage the aphasia patients to speak. Light jokes and humorous in the stories used for the process seem useful as they are easier to understand and they make the speech-learning and communication environment more friendly [11]. Including humorous is not easy and sometimes it is not appropriate but part of the therapies could include available added value, such as sound effects, colors and other graphical elements.

Animation with Scenario: Sugiura (2002) stated that animated study materials, such materials of real life recorded by video camera, may enhance the rate of appropriate information transmission among the non-fluent aphasics [12]. According to our research, we did not find Digital Picture Cards with illustrated animation. By means of illustrated animation, verb parts can be highlighted without the use of arrows (arrows are normally used to point out how the objects move). We produced ten sets of two kinds of Digital Picture Cards; each set uses the same graphical images. Those formats are non-animated and animated cards.

4. Concluding Remarks

On the basis of data collected and analyzed and in order to research the effectiveness of visual expression of Digital Picture Cards, we proposed an animated of digital picture cards as computer-based therapy for the treatment of aphasia. The addition of visual information design to digital picture cards could be an effective method to improve speaking fluency among aphasics.

Our research seemed to support that animation approach provided not only meanings of the words used in the core-story but also the relationships between and among these words. Furthermore, the animated approach tended to make the speech-training process for aphasics more relaxed and comfortable. This more enjoyable setting seemed to stimulate their creativity.

To support our preliminary findings from this research project, we intend to replicate the animation approach in Michigan, the United States of America in late August 2002. We believe that a cross-cultural comparison will lend more credence to this project.

Acknowledgements

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Tangible Media Communication Design in Future Home Environments -@home project-

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Abstract

This paper presents the key concepts and products of the @home Project[1] (FEEL group, Keio University Inakage Lab), a research group on communication media design in future home environments. This project looks at the design of "human-information", and "human-human" communication media within the home environment. Through the study of design approaches for supportive tools, we produced nine prototype models using tangible media (managing digital information through graspable physical objects) and demonstrated them in a public exhibition.

1.Introduction

1.1 Background

Today, we are about to realize a ubiquitous[2] environment where digital information can be accessed from virtually "anywhere, anytime" through the Internet. With it will come a change in the way we design information media.

In the home, networked information appliances are coming into practical use through the efforts of major manufacturers. Information devices derived from the market mechanism appear before us in the form of products, used by people who do not contemplate its potentials or problems. In the field of research, the future of "human-computer" interaction is discussed, in such groups as in ACM SIGCHI. As exemplified by Tangible Bits[3], we are beginning to see the materialization of, not only graphical user interfaces, but real world oriented contents utilizing the principals of human behavior and physical characteristics. However, these concepts are limited to proposing designs for user interfaces and often do not consider communication design in actual environment settings.

1.2 @home project's themes and concepts

The @home Project, based on the concept: "there is a need to design media in accordance with the place and setting for which people live", proposes communication media design specified for the home environment. We analyze the conducts and contexts in the home, apply the concept of Tangible Media as interfaces between man and computer, and propose a model that seamlessly integrates into our living environment. The emphasis is put on the design of communication, not the interface.

Ultimately, we create a setting for where we can discuss the proposed models with the public; and send a message out to society about the key concept of our study, or the relationship between "human-information and human-computer."

2. Proposed model on communication media in future home environments

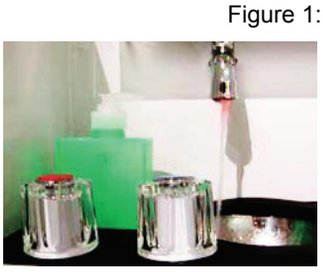
The @home Project developed a total of nine prototype models. Each prototype was designed based on conducts and contexts within the home. The common concept behind each design was "to handle digital information as one would handle physical objects" and used "tools and furniture found in any household" as interfaces for obtaining information. Each prototype is also a networked device that assumes a broadband Internet environment.

2.1 Tangible interface as a straightforward method for communication of information

Here, we provide information present within the home and information desired in the home in a manner that is easy to understand.

This tool shows the day's weather through the turning of a faucet. It lets users access information, not by keyboard and mouse, but through an everyday routine activity.

Figure 1: Mirror



Tells the water temperature by using our natural sense of color; warm colors, if the water is hot, and cool colors if the water is cold. It helps create both a comfortable and informative living space.

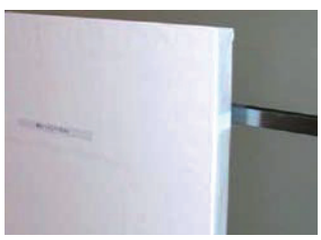
Figure 2: Aqua Palette

2.2 Tangible interfaces for communication with distant people

We created models for communicating with distant people from the home through natural conducts and contexts. The @home Project places an emphasis on the possibilities of private communication using "networked objects and furniture." Next, we introduce four communication media:

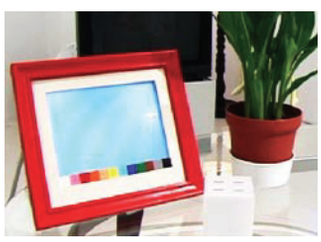
Using light, an ancient form of communication; the intuitive action of lighting a lamp conveys a sign of human presence through a network.

Figure 3: Twin Lamp



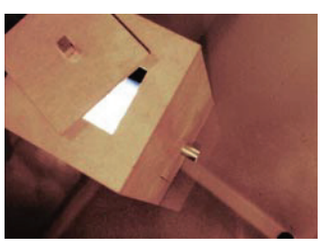
A tool that lets users share a wall with a distant partner by "knocking". Using the physical and psychological characteristics of the "wall" metaphor, creates a space that feels as though there is a friend in the next room.

Figure 4: ShareWall



A canvas hung on a wall, shared through a network, lets parents of commuter marriages communicate with their children back home. It is method for families to sustain constant communication.

Figure 5: Canvasation



Lets users share a small space inside a box with a partner. Using the affordances of the "box", creates a small environment for which users can enjoy private communication.

Figure 6: Cobox

3. Environment analysis and scenario-based communication design

The proposed models in section 2 were created based on design approaches derived from research done in the @home Project. This design approach was devised by application of design research in Philips Design's "Vision of the Future"[4] and IDEO's environment analysis design[5]. The following is an overview of our design method.

3.1 Setting the environment

We focused on the "home", our most familiar environment, as the stage for our study. We first created a virtual model family, and decided the family make-up, along with the personalities of each of the family members. We assumed a home with a broadband, always-on Internet connection as the model environment.

3.2 Extraction of keywords

From our research, we selected "everyday" "common sense" "simple" as keywords for the @home Project. We built the following hypothesis: "In the home, the most practical and effective method of acquiring information is through everyday activities or objects."

3.3 Analysis of conducts and contexts in each room

We analyzed and extracted common activities in each of the following rooms: "living room", "entrance", "bathroom", "lavatory", "kitchen", "personal room", and "bedroom".

3.4 Decision of contents, and scenario design

We decided which activity to support in each room using our data on conducts and contexts. Then we created a story on how our supportive tool would be used. We use the story to modify the tool, and to make further applications.

4. @home Exhibition

In order to present the results of our study, we held the @home Exhibition. The purpose of this exhibition was to share opinions about the applied model with exhibition visitors. We had many visitors from various backgrounds, and many discussions on the future of "human-computer", "human-information", and "human-human" communication were heard. At the exhibition, the scenarios used in our design process were placed along with each of our works so that the activities and relationships that the tools support would be better understood. We produced a virtual home environment at the exhibition site to show how the tools would weave itself into our living environment.

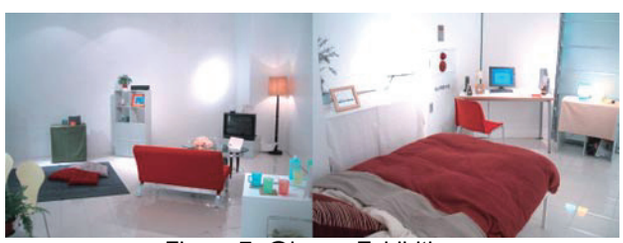


Figure 7: @home Exhibition

5. Conclusions and future applications

We believe that, not only shape and color, but the design of "human-information" and "human-human" communication in a human-centered environment will become important aspects of future design. They require unified aspects with interdisciplinary approaches, and an open-minded attitude toward new technologies. Today, the members of the @home project continue to develop new models in the home, along with expanding research areas on the relationship of human and information to public spaces (Infoscape in the city) such as "train stations" and "cities", and commercial spaces such as "cafes." A demonstration of the former model, the future of "human and city information", will be exhibited on October of 2002 where a information center will be designed at the subway station square in Kannai station, Yokohama-City. We plan on developing this model into a future inner-city media.

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Day-Dreaming States in Interfaced Environments

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Abstract

In Cyberart, the anthropological effects of cyberspace homologate post-biological forms of existing experiencing sensitive qualities of interactive worlds. By interacting, we generate "interval zones""[2], between the body and the technologies, mixing artificial and biological and expanding cognitive processes through an amplified, electrified, computer-interfaced body. Telematic reality in OUROBOROS[3] is related to Brazilian rituals and the desire to incorporate animals receiving their powers. When connected, we reach another level of being: that of the reptile, live among snakes, what means to stimulate life in some level of dream and imagination. By hyperconnections, immersions, navigations, telepresence and robotic remote action, or creating artificial life and self-regenerations,we experience OUROBOROS' principle: "My end is my beginning", or the cyclic nature of the universe, the life's unending principle.

1.Theme In Cyberart, the *"sujet interfacé"*[4] surpasses the human condition experiencing sensitive qualities of interactive worlds. Body's structural copulae connected to interactive technologies exchange natural and artificial signals. Consequently, the anthropological effects of cyberspace homologate post-biological forms of existing in individual or networked computer-generated artificial environments enabling complex ways to act into the data structure. We act in the field of phenomena, experimenting invisible forces, physical and mathematical laws, simulating genetic behaviors of organisms in artificial environments. By interacting we experience the poetic existence in *memescapes*[5], inhabiting within artificial landscapes no longer made of earth, but of memory units. Interfaces and data extend gestures beyond the boundaries of the body, and our sensitivity can live in a new cognitive space as an extension of our sensory space. What radically modifies the art scenario is undoubtedly the possibility of interactive technologies to offer responses, feedbacks and self-organizations, generating "interval zones"[6] between the body and the technologies, by mixing artificial and biological signals. Interfaces and algorithmic processes expand cognitive processes through an amplified, electrified, computer-interfaced body. Interactive art goes into the field of complexity sciences, and technoecosystem's issues are important to understand what is implied in the sensitive experiences.

My artistic project *OUROBOROS* explores dialogical processes between the human, the animal and the artificial, providing telematic connections that open a new sensitive field to art expressiveness. Interactive artists always explore the possibilities of technological grammars to offer a dialogical and collaborative system to manifest metaphorical issues generating emotion in simulated life forms. From this point of view, we use softwares, their metalanguage and metacodes, and even if they have had until now limited possibilities to elaborate desires, dreams and intuitions, these systems can already create synthetic lives or hybrid lives coupling the natural and the virtual. In the generation of synthetic worlds, algorithms determine environments based on some kinds of mutant behaviors, in the process of data regeneration, which simulate perception capabilities, communication capabilities, reasoning and decision capabilities. Computers are increasingly becoming more organic with their capacity to regenerate information and simulate dynamic and cognitive processes.

Telematic reality in *OUROBOROS* is related to Brazilian rituals and the desire to incorporate animals by receiving their powers. Interactions allow us to live among snakes, what means to stimulate life moments in some level of dream and imagination. By interacting we can be immersed in day-dreaming states, because the interfaced body experiment illusions and dreams, enigmatic and pleasant thoughts, while we are awake connected to virtual worlds. Our *cyberception* Ascott [7]reaches another level of being: that of the reptile, by hyperconnections, immersions, navigations, telepresence, remote actions and self-organizations. By interacting in the different linked environments we are guided by the slogan *"My end is my beginning",* concerned to the cyclic nature of the universe: self-fecundation; disintegration and re-integration; truth and cognition, self-regenerations, the unending principle. Four poetic environments are inspired in *OUROBOROS*', the great world serpent that encircles the earth, biting, devouring, eating its own tail. *MEMORIES* hybridize images, sounds, texts and offer connections and associative thoughts in hypermedia structures with a database with memories' holes on the snakes' skins exploring symbolic, scientific, anthropological and artistic aspects of serpents' life. People can also write, send and share their memories about snakes, and a collective text results from the interactions. *SERPENTARIUM* proposes a telerobotic event with telepresence and remote action allowing us the seamless condition by sharing the body of a robot-snake living in a serpentarium in Brazil. We live with real snakes, and a web camera is coupled to the robot and transmits in the scenes from the serpentarium. The remotely controlled robot-snake makes several trajectories by the participants' orders that send movements using the keys of direction whose signals are interpreted and result in trajectories in the serpentarium. The robot is an agent that dwells and acts in the physical world. *VILLAGE* is an on-line virtual reality where we can live with these legendary creatures. It bestows visual and sound qualities during navigations and teleimmersions in the on-line virtual reality snakes' landscape. By using the arrow keys and mouse or a joystick we can move within the artificial world and the sensory stimuli allow proprioceptions to the body in some physical correlations with the virtual space. Displacements change images and and moving around inside the environment we are reptiles, living between artificial snakes, always having a serpents' point of view. Tunnels and topographies, sounds of snakes, images of snakes' lives stimulate our serpents' tours. *TERRARIUM* explores the creation and the control of artificial life. By using the data structure and algorithms' behaviors, we create, provoke, share and control life through

the interactive systems. Concerning artificial life, by linking DNA sequences from twelve species of snakes, whose genetic code is given by experts of the University of Caxias do Sul, we generate virtual serpents. Parameters translated into algorithms, create artificial serpents controlled by genetic algorithm system prepared to execute and process calculations, simulating characteristics of organic environments The replication of another snake as a clone of memes is automatically sent to any other machine, as well the creatures created by the *cross-over* combination can be replicated in other machines. The organic simulated behavior of the environment is controlled by linking heat and dynamics, because the artificial temperature influences the speed of serpents' displacements. By giving food, lifetime of serpents is enhanced. The selection of data results in the fitness function and the same process generates combinations of sets. *VILLAGE* and *TERRARIUM* can be placed on the second interactivity level, following Edmond Couchot's recent theories[8] related to the second Cybernetics, offering complex behaviors from technologies whose evolutions and independent responses are provided by complex systems. In this sort of interactivity, technologies'behaviors are more refined becoming closer to organic, biological and intelligent systems. Interactions are no longer reactions or single responses but complex and evolutive situations working on many probabilistic and not deterministic ways. Using algorithms inspired in cognitive sciences and biologic sciences, connexionism and genetics, we explore some relationships processed by data structure. Artificial worlds change, evolving as natural worlds. The vocabulary of this kind of interactivity comes from genetics laws, physical phenomena, mental functions and correspond to the technology powers simulating some sort of life. Technologies are capable of partially perceiving, analyzing and evolving in some situations, responding with self-regenerations which determine new forms of life related to artificial systems.

Agents/Dynamic and autopoetic.

The development of a collaborative website with artificial life has explored simultaneously an agent's knowledge data related to a multiagents system with genetic algorithms and their capacity to execute and process some autonomous calculations. We consider an agent, the algorithms that can produce many actions because their own internal mechanisms change evaluating the conditions and influencing the agents during the interactions. The passive entities are called environment and the scene of the virtual is named landscape. The agents in *TERRARIUM* are the virtual serpents that recognize the characteristics of the synthetic territory or scene, and acquire some intelligent with behaviors. Each serpent has displacements with a certain level of spatial intelligence and lives with the other creatures. They have a relative level of multiagents' systems because the collective behavior serpents have. Each one has an independent and a collective existence respecting the other's constitution. We observe that the system generates a virtual entity with capacity of perception and partial representation of the environment autonomous behavior, corresponding to the system's knowledge, its capacity of reasoning and considering the conditions of serpents' life. The virtual creatures go up and down the topographies of the virtual landscape, they search for food, become faster and faster in their displacements because of the heat of the environment, among other qualities simulating natural environment. *VILLAGE* has a virtual dynamic capacity changing by algorithms that determine the synthetic landscape, when the user navigates in proprioceptive states, or living spatial correspondences with the simulated world that responds to his/her actions. The dynamic scene responds by mutations simulating an imaginary synthetic environment, offering some spatial sensations we experience in real world. We simulate some displacements in many directions with the arrow keys or a joystick going to the left, to the right, going ahead, coming back and modifying the point of view by using a few classes of objects collision, genetic algorithms, light, sound implemented in C++ and using a software developed by the NTAV programmers. In these creative environments we have to deal with variables of data flow, control, random situations, self-regeneration calculation or combining those and other computer methods and producing sets of data to achieve different results searched by the artistic thought.

The artists always try to exceed the limits of the systems and program the variables of the interactions envisioning the aesthetic dimension of interactive worlds. Technologies modify art environment not only in a technical way but because they are sensitive and cognitive systems and act in epistemological levels surpassing machine work, and acting more like a consciousness process related to complex systems. To navigate in virtual worlds, to explore autopoetics and self-organization, to regenerate virtual environments, to raise artificial life, to be telepresent and act in remote environment is a very rich field for the imagination of artists' creative minds. Technological context puts art in the field of complexity and requires not only redimensioning artistic activity but also the entirety of the so-called Human Sciences to exercise inter and cross-disciplinarity. Art, with its terrain of freedom, is the place of convergence for such exercise. About the work, Roy Ascott says: *" results from the creative transdisciplinary action of a group[1] of scientists, technologists and artists, whose skills, know-how and insight, combine imagination with automation and robotics, software design, biological science, and telematic expertise. This is a collaborative work at a very refined level of integration. The work, too, is integrative of aesthetic experience with scientific exactitude and educational intent".*

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[1] ARTECNO TEAM 2002: Artistic Direction: Diana Domingues- *Software* and interface – Gustavo Brandalise Lazzarotto (Lead Programmer)- Gelson Cardoso Reinaldo (interfaces programmer) Mauricio dos Passos– PIBIC CNPq -Programmers- Renato Marangon and Geovane Pandolfi IC CNPq– Hypermedia: Gabriela Cavalli – IC UCS, Maurício Vazquez, Stelamaris de Oliveira, Elisabete Bianchi – UCS, Solange Rossa Baldisserotto – AT CNPq- Thanks: Museu deCiências Naturais,- Prof. Paula Demeda, Instituto de Biotecnologia UCS, Prof. Dr. Sergio Echeverrigaray, Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq.

[2] DOMINGUES, Diana. Interactivity and Ritual: body dialogues with artificial systems. In: SIGGRAPH 99, 26th International Conference on Computer Graphics and interactive techniques. Los Angeles,CD-ROM – ART GALLERY – Critical Essais, 1999.

[3] http//artecno.ucs.br/ouroboros

[4] COUCHOT, Edmond. "La Technologie Dans L' Art – De la photographie à la réalité virtuelle". Éditions Jacqueline Chambon, Nîmes, 1998, pp.55.

[5] DYENS, Olivier. *L'émotion du cyberespace*. Art et cyber-écologie. In: POISSANT, L. (Org.) *Esthétique des Arts Médiatiques*. Montréal: Presses de l'Université du Québec, 1995, p.p. 399

[6] DOMINGUES, Diana. Interactivity and Ritual: body dialogues with artificial systems. In: SIGGRAPH 99, 26th International Conference on Computer Graphics and interactive techniques. Los Angeles,CD-ROM – ART GALLERY – Critical Essais, 1999.

[7] ASCOTT, Roy. "Instrumental Poetics". In: DOMINGUES, D, *INS(H)NAK(R)ES*. Caxias do Sul: Lorigraph, 2001.

[8] COUCHOT, Edmond. "Pour une pensée da la transversalité." In: SOULAGES, F. (Org.) *Dialogues sur l'art et la technologie*. Autour d'Edmond Couchot. Paris: L'Harmattan, 2001, pp.155.

'Here's Peeping at You' : The Computer Screen, the Logic of the Gaze, and the Miniaturization of the Image Window

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+++abstract+++

Much of our daily communication takes place through "image windows" that are constantly shrinking in size. The tiny cell phone screens are among the most important information surfaces today. We watch "micromovies" from dedicated windows opening up on our desktop. The videogame displays can consist of a screen divided still further into even smaller units. The purpose of this paper is to discuss this tendency towards miniaturized communication interfaces by relating it to larger media historical and theoretical issues. The shrinking of the visual interface goes back to the 19th century and can be detected from various fields from photography and mass produced images to optical toys and fantasies about personal "tele-communication" devices. This
miniaturization is actually part of a cultural phenomenon I call the "gulliverization of reality". It has to do with a constant dynamics between expanding and shrinking, exploding and imploding, the static and the mobile, a phenomenon progressively moulding the mediated environment and the role of the spectator within it. This paper tries to understand the logic of the gaze occupied by and involved in such a perceptual process. By looking at neglected media archaeological layers of historical data it aims at a better understanding of our contemporary interfaces and the "traffic" that goes through them.

1. Introduction

Considering the centrality of screens in contemporary media culture, there have been surprisingly few attempts to define their identity as cultural artefacts. In spite of their ubiquitous presence screens seem strangely evasive, constantly appearing in new places and new forms. We use them, but we rarely stop to think about them. They are treated as barely noticeable surfaces connecting us to streams of data or giving us access to virtual worlds. Screens, however, have not always had such a central role. There was a time when they did not even exist. They have evolved within cultural processes, as answers to deeply felt social, psychological, ideological and economic needs. They have, in other words, a history which can and should be uncovered. However, simply writing a chronicle of the succession of different kinds of screens would not make much sense. Screens should not be studied in isolation of the apparata they are part of.[1] Such apparata provide conditions for the actual viewing experience, both enabling it and constraining it. The viewer is at the same time physically related to the screen in the viewing space, and mentally connected to the space on the screen. These aspects are always interconnected and affect the total experience. Viewing apparata change in time and are submitted to varying cultural readings depending on context.

Although work has been done on specific issues, such as Zielinski's research on the relationship between the cinema and the television screen or Manovich's studies on the computer screen, a general “archaeology of the screen” remains unwritten.[2] This paper should be seen as

[1] The notion of apparatus comes from cinema studies: it comprises not only the technical system, but also the elements of the viewing situation, including the relationship between the screen and the viewer, which is both physical and imaginary. See *The Cinematic Apparatus*, edited by Teresa de Lauretis and Stephen Heath, London and Basingbroke: Macmillan, 1980.

[2] See Siegfried Zielinski: *Audiovisions. Cinema and Television as entr'actes in history*, translated by Gloria Custance, Amsterdam: Amsterdam University Press,

a contribution toward a historical phenomenology of the screen, or "screenology". The ultimate goal could also be called more simply a history of "screen practice(s)", to use a concept coined by Charles Musser in his studies of early cinema and its precedents.[3] Such a history should not only deal with the evolution of different types of screens and the relationships between them, but also with the development of visual apparata themselves and their uses and meanings within specific cultural, social and economic contexts. Capturing the history of the viewing experiences is perhaps the most difficult challenge. We rarely have direct evidence about what went on in the viewers' minds when staring at a screen. It is usually necessary to resort to secondary sources, as Miriam Hansen has so well demonstrated in her studies about early film spectatorship.[4] It is important to consider the general conditions that may have influenced each viewing experience. Also the apparatus itself may provide us hints about the kinds of experiences it makes possible. For verification, we also have to resort to "projective" material, such as literary texts, popular cartoons and other forms of ephemera.

In this paper I will explore the historical background of the shrinking visual interface. Although it is certainly true that this phenomenon has to do with recent technological advances, marketing strategies and emerging social practices (related to the increasing speed of the 'dromological' information society), it should also be assessed from a historical perspective. From the 19th century on, the diminishing of the screen has been inseparable from its counterpart, the expanding of the screen; a cultural dialectic has developed between 'big screens' and 'small screens'. The phenomenon could be called the "gulliverization of the visual field". This concept refers to the constant dynamics between expanding and shrinking screens. From the perspective of the viewer, such "cultural optics" is also related to other dichotomies, such as near and far, inside and outside, static and mobile. Under what kind of cultural conditions did the gulliverization of the visual field develop? How has its dynamics changed? How is it related to issues like the evolution of viewing apparata and the historicity of spectatorship? This paper starts to unravel these huge and complex questions by exploring the emergence of the notion of the "small screen" as an information surface. It looks at the etymology of the word "screen" and the meanings that were assigned to it during centuries. The key question is: how did the word come to be associated with media and communication?

2. Etymologies of the 'Screen'

According to the *Oxford English Dictionary*, the foremost authority on the history of the English vocabulary, the word "screen" first appears in texts from the 14th and the 15th centuries, but its etymological origins remain unclear.[5] In the 16th century, and probably earlier, it was used to refer to a "contrivance for warding off the heat of fire or a draught of air". The screen meant, above all, a floor-standing piece of furniture, consisting of a sheet of lighter, often translucent material (paper, some kind of fabric, etc.) stretched in a wooden frame. There were also smaller handheld versions for ladies; a text from 1548 speaks about "Two litle Skrenes of silke to hold against the fier".[6] In addition to their main purpose, the often richly decorated hand-screens were -- like fans -- also objects of fashion, aesthetic pleasure, and erotic play. Gradually screens gained new connotations. Beside the natural elements, they were said to provide protection from "other inconvenience or danger, or to shelter from observation, conceal, shut off the view, or secure privacy", as the *Century Dictionary and Cyclopedia*

1999 (orig. in German 1989); Lev Manovich: "Towards an Archaeology of the Computer Screen", *Cinema Futures: Cain, Abel or Cable? The Screen Arts in the Digital Age*, edited by Thomas Elsaesser and Kay Hoffmann, Amsterdam: Amsterdam University Press, 1998, pp. 27-43.

[3] See particularly Charles Musser: *The Emergence of Cinema. The American Screen to 1907*, New York: Charles Scribner's Sons, 1990. It should be noted that in the title of his book Musser uses the word "Screen" as synonymous with the institution of the cinema, which reflects an actual historical usage.

[4] Miriam Hansen: *Babel & Babylon. Spectatorship in American Silent Film*, Cambridge and London: Harvard University Press, 1991.

[5] Much the same goes for the French "écran", which most dictionaries, including The Oxford English Dictionary, see as "closely corresponding with" the history and the meanings of"screen". All references to the *Oxford English Dictionary* (OED) are to the II edition, edited by J.A. Simpson and E.S.C. Weiner, Oxford: Clarendon Press, 1989.

[6] Oxford English Dictionary, vol XIV, "screen".

(1911, orig. 1889) stated.[7] Whether from heat, cold or an intruding gaze, the screen was, above all, considered a surface that protects a person by creating a barrier against something unconfortable or threatening. It was essentially a piece of furniture, or a personal portable accessory, related to items like clothing and jewels.

It was during the early 19th century that the word "screen" began to attain meanings that anticipated its current uses within media culture as means of displaying and transmitting information. The earliest such occurrence recorded in the *Oxford English Dictionary* comes from 1810 and reads: "To make Transparent Screens for the Exhibition of the Phantasmagoria".[8] This represents a departure from the domestic sphere of furniture and fashion to the world of public entertainment. In the Phantasmagoria show the audience was shown images that were projected on a semi-transparent screen stretched in one end of the hall from behind it with a movable magic lantern (often mounted on wheels and moving along rails). Although it may be true that the word "screen" had not been used in such a meaning before 1810 (which I doubt), it is clear that "screen practice" as a phenomenon had existed for a long time. Phantasmagoria itself was an improvement of the touring magic lantern show. An even earlier form of screen practice had been the shadow theatre. Although its exact origins are not known, several ancient traditions evolved in different parts of Asia from India

3. Anticipations of the Small Screen

While the emergence of the "big screen" in the 19th century can be traced fairly accurately, the origins of the "small screen" remain more open to speculation. It is not immediately clear how things like fire screens would have developed into information surfaces. One might consider the fact that fire screens were often embellished with ornaments and even pictures. During the Victorian era the large folding screens that were used in the homes of the bourgeoisie to divide spaces and also as fire screens were often totally covered with printed scraps, colored lithographs and other types of mass-produced images. They became collages, recalling the countless "scrap books" created by women and children in their spare time.[9] Although the images pasted on screens may have served primarily a decorative function, they also became celebrations of the enormous advances within the "regime of the visible". Such naive collages anticipated the formation of visual media culture by simulating the frenzy of new images made possible by advances in printing and photographic reproduction technologies. The habit of decorating screens with cheap mass-produced images became so common, that cultural critics were concerned about their negative impact on "good taste". Meriocre, artworks were often compared with such screens spotted with cheap, banal images.

Although Victorian decorated screens can be considered information surfaces only indirectly, by relating them to the wider cultural context, the idea of the fire-screen had been adopted as a device for displaying transparent paintings in the domestic setting already in the late 18th century. Transparent paintings, known as "moonlight transparencies" or "diaphanoramas", were mounted on floor- or table-standing wooden frames.[10] Illuminated from behind, they began to glow in brilliant colours. It should be noted, however, that no separation between "hardware" and "software" was yet introduced. The painting was part of the screen, it could not be changed. The separation took place in the 19th century, when forms of back-lighted images and viewing devices proliferated. Closest to the idea of decoration were "lithophanes", fine "embossed" porcelain images that produced an effect of relief when lighted from behind. Lithophane plates were used for many purposes: they were hang against window panes, inserted in lamp shades and even used as decorations for tea warmers! Decorative wooden or metal lithophane viewers, often with a candle

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[7] *The Century Dictionary and Cyclopedia* (CDC), New York: The Century Co, revised and enlarged edition, 1911 (orig. 1889), Vol VIII, "screen".

[8] Oxford English Dictionary, vol XIV, "screen".

[9] It would be tempting to relate this to the contemporary habit of covering the door of the refrigerator with postcards, photos, notes and little magnets.

[10] The German painters Georg Melchior Kraus and Franz Niklaus König were well-known creators of such transparencies. See *Sehsucht. Das Panorama als Massenunterhaltung des 19. Jahrhunderts*, Bonn: Kunst- und Ausstellungshalle der Bundesrepublik Deutschland & Stroemfeld/Roter Stern, 1993, 198-199. See also Birgit Verwiebe: Lichtspiele. Vom Mondscheintransparent zum Diorama, Stuttgart: Füsslin Verlag, 1997. Transparencies were also displayed publicly in large size as part of different festivities. The connection with theatical scene painting is obvious, but the issue cannot be elaborated on here.

stand at the back, made it possible to change the panels when desired. As a back-lit image enclosed in a frame, the lithophane functioned as visual apparatus even when serving a decorative function. It opened a new channel of visual information to the living room, clearly differing from the paintings on the walls.

The devices mentioned in this section so far have been related to furniture. They either stood in the corner of the room (like the TV set much later) or were placed on the table for viewing. When it comes to the anticipations of mobile, handheld devices it makes sense to pay attention to decorated fans that enjoyed long lasting popularity among women in the 18th and the 19th centuries. Decorated fans could be considered a form of popular art and arguably a new kind of information channel, a medium. The production and variety of pictorial fans was enormous. While there were many designs that imitated existing prints or mythological genre paintings, particularly in the 19th century special fans were often produced in connection with events like world's fairs, coronations or popular shows. Beside their practical function, they functioned as souvenirs, advertisements and even as program booklets.[11] There were also hand-held screens with images. A particularly interesting variant was the panorama screen. It would contain a small "stage opening", across which a long strip of images was wound from one roller to another. The development of the small screen also had to do with the appearance of "optical toys", like the phenakistiscope and the zoetrope, in the 19th century. These devices that were originally scientific demonstration tools, presented short animated "movies" that could be manipulated by the users. A wide variety of topics were available. The users could easily create their own picture discs or strips. Although these devices did not have "screens" in the later sense of the word, they shared many features with recent interactive media devices: they were based on a "hands-on relationship", the created a personal relationship to the user and provided tools for one's own media production.

4. Conclusion

This article has not been meant as an exhaustive treatment of the history of screen practices. It has not even purported to say all the essential things about the "small screen". It has brought forth some important issues and interpretations, hinting at the wealth of material and approaches available for closer investigation. As the exploration of the *Oxford English Dictionary* demonstrates, over time the word "screen" has attained a large number of meanings, only a few of which have been dealt with here. How are these meanings connected? Is there any meaningful link between a 18th century fire-screen and a 20th century cathode-ray tube, beyond the obvious fact that both are "lighted" or "heated" from behind? Wasn't the traditional screen meant to isolate the person, to protect him/her from heat or a gaze, to increase his/her confort and privacy? Isn't the function of the television screen the opposite, to expose the viewer to the "heat" and "obscenity" of commercial media culture, and to invite the public sphere to invade the private? It might be claimed that the relationship between issues like private/public is never so clearcut. While blocking something from view, the traditional screens also raised curiosity and desire towards the other side (best demonstrated by the Japanese wood-block prints showing people observing the shadows of others moving behind paper screens, or '*shozi*'). The television screen also provides privacy by offering a voyeuristic vantage point to observe the event "on the other side". It protects the viewer, while exposing him/her simultaneously to the forces and temptations of consumeristic capitalism. There would be other intriquing parallels to draw. For a full treatment of the archaeology of the small screen, the history of the mirror and the discourses surrounding it should be also taken into consideration.[12] These will be dealt with in a forthcoming paper.

[11] For a recent study of Smith's career, see Mike Simkin: "Albert Smith: Entrepreneur and Showman", Living Pictures, vol 1, n:o 1 (2001), 18-28.

[12] I have dealt with this issue in more detail my article "Seeing at a Distance. Towards an Archaeology of the 'Small Screen'", *Art@Science,* edited by Christa Sommerer and Laurent Mignonneau, Vienna-New York: Springer Verlag, 1998, 262-278.

The Art of the Interface in Mixed Realities
Predecessors and Visions

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Abstract

The approach of this paper is broad and historical; it attempts to expand a narrow technical view by looking at historic art media together with contemporary media art. By focusing on recent art against the backdrop of historic developments, it is possible to better analyze and grasp what is really new in media art and, using cornerstones from the history of media of illusion and immersion, it is a material and theoretical contribution to a new, emerging discipline: the science of the image. Where and how does the new genre of virtual art fit into the art history of illusion and immersion in the image, that is, how do older elements continue to live on and influence this contemporary art? What part does this play in the current metamorphosis of the concepts of art and the image? For example, the influence of Mixed Realities and their interfaces, where a new blend of traditional media is created through combining architecture, sculpture, painting, and scenography.

Bildwissenschaft – Science of the Image

Rudolf Arnheim's recently published article, *The Coming and Going of Images,* is an impressive plea for integrating the new, interactive, and processual worlds of images into the experiences, insights, and riches which have come down to us from past ages in their works of art.[1] At no other time in history has the sphere of images produced by humans changed at such a breakneck pace, never before were people exposed to so many and so different image worlds, never before has the way in which images are created changed so radically. In our time, we are witnessing the transformation of the image: it is rapidly becoming a computer-generated, virtual, and spatial entity that appears to be capable of changing autonomously and represents a total, life-like, visual, and sensory sphere. Temporal and spatial parameters can be changed at will so that virtual spheres can be used as models or simulations for gaining certain types of experience. Global access to images via the Internet coupled with the techniques for enabling telepresence have opened up new options for sensory perception. In addition, large sections of our natural surroundings have been declared an image resource and amalgamated with artificial images to produce so-called Mixed Realities, where it is, in many cases, almost impossible to distinguish between simulacrum and original. Today, in a finely meshed alliance between science and art, media art explores the aesthetic potential of interactive, processual image worlds. Well-known representatives of virtual image culture, such as Maurice Benayoun, Monika Fleischmann, Masaki Fujihata, Seiko Mikami, Simon Penny, Jeffrey Shaw, and Christa Sommerer and Laurent Mignonneau, work both in basic research and combine art and the natural sciences in the service of today's most complex technology for generating images. Media artists work in very disparate areas, which include robotics, telepresence art, bio-cybernetic art, space art, experiments in nanotechnology, artificial life (or A-life) art, fractal art, design of virtual agents, data-mining, mixed realities, and database-supported art. Perhaps the most important areas are telematic art, genetic art, and immersive-interactive art, which are all collected under the heading of *virtual art*. Thus the greatest challenges facing contemporary artists can be defined as interface design, the opening up of complex options of action, and thus of experience as well, for the user, and experimentation with the new and shifting constraints of human dealings with the everchanging machines and systems.

This dynamic process of change has fueled the interdisciplinary debate about the status of the image, which has been ongoing now for about ten years.[2] The new media, and particularly the new art produced with them, pose this question more urgently and with a new quality. The projected new discipline of a "science of the image" consciously discards old notions of specifically "artistic" images. In this regard, it refers back to Aby Warburg's early ideas on a science of the image oriented on cultural history, Erwin Panofsky's "new iconology," or the studies on vision by Norman Bryson und Jonathan Crary. Whereas in the past, studies and analyses on the concepts of the image were almost entirely to be found within the province of art history, research in this field has increased exponentially in psychology, aesthetics, philosophy, cultural studies, visual studies, natural sciences, and computer science. Particularly in art history, the oldest discipline concerned with images and media, the question of the status of the image has once more become a virulent issue; a remarkable parallel to the racing speed of developments in the field of the new media and their worlds of images. At the moment, to employ an expression of Walter Benjamin's, it has got "the wind of the world's history in its sails." The emerging science of the image is a fruitful addition to the scientific history of artistic visualization[3], a history of science in art and images, as proposed by Bruno Latour und Martin Kemp[4] or the recent U.S. American foundation of a *science*

[1] Rudolf Arnheim *The Coming and Going of Images, LEONARDO*, Vol. 33, No. 3, pp. 167-169, 2000.

[2] See: FREEDBERG, David. 1989. *The Power of the Images* : Studies in the History and Theory of Response. Chicago: Univ. of Chicago Press; BELTING, Hans. 1990. *Bild und Kult*: Eine Geschichte des Bildes vor dem Zeitalter der Kunst. Munich: Beck; CRARY, Jonathan. 1990. *Techniques of the Observer*: On Vision and Modernity in the Nineteenth Century, Cambridge, MA.: MIT Press; MITCHELL, William J. 1995. *Picture Theory: Essays on Verbal and Visual Representation*. Chicago: Univ. Chicago Press; ELKINS, James: The Domain of Images, Ithaca: Cornell University Press 1999; MANOVICH, Lev. 2001. *The Language of New Media*. Cambridge, MA: MIT Press.

[3] KEMP, Martin. 1990. *The Science of Art* : Optical Themes in Western Art from Brunelleschi to Seurat. New Haven CT: Yale Univ. Press, SOMMERER, Christa, and Laurent MIGNONNEAU, eds. 1998a. *Art@Science*. New York: Springer.

[4] LATOUR, Bruno. 1996. Arbeit mit Bildern oder: Die Umverteilung der wissenschaftlichen Intelligenz. In: Der Berliner Schlüssel: Erkundungen eines Liebhabers der Wissenschaften, ed. B. Latour, pp. 159–190. Berlin:

of the image, where the focus is primarily that of the natural sciences[5]. On our way toward a science of the image, Maurice Benayoun transports us in *World Skin* to a virtual battle panorama, which the user experiences interactively through CAVE technology. Placed like Potemkin villages, soldiers of many countries and epochs are arranged in a kaleidoscopic pattern in a theatre of war and death. In *Murmuring Fields*, Monika Fleischmann and Wolfgang Strauss create a virtual space of philosophical thought, which stores statements by the philosophers Vilém Flusser, Paul Virilio, Marvin Minsky, and Joseph Weizenbaum, and is experienced as a Mixed Reality. Jeffrey Shaw places visitors to his *Place Ruhr* installation on a rotating platform where they view panoramas of industrial landscapes in the Ruhr, Germany; places that are monuments to a passing age. From automated search engines for images on the web, Christa Sommerer and Laurent Mignonneau generate a sphere of spatial effects in a CAVE in their work *The Living Web.*

Predecessors

Although many people view the concept of mixed realities as a totally new phenomenon, it has its foundations in an unrecognized history of immersive images. In addition to the artists and their works mentioned above, one could also cite works by Luc Couchesne and Mark Naimark, amongst others. Whether consciously or unconconsciously these artists all refer back to a historic ancestor in the history of art and the media: the *panorama,* patented in 1787. Originally conceived as a new mode of visualization for purposes of military reconnaissance, Robert Barker's invention with its circular perspective was very soon marketed and, in the course of the 19th century, became a mass medium that reached several hundred million people. On the changing terrain between art, spectacle, and political propaganda, at first panoramas were painted by single artists, working alone in years of hard and painstaking work. By 1800, in the capitals of England and France, panoramas were being produced by teams of painters whose work was organized according to strict economical principles and the division of labor, that is, industrial processes, in a matter of mere months. The panorama marks the combination of art, science, and technology in an image medium for the 19th century and it was one of the most widespread image media in art history.[6]

The suggestive power of immersive image spaces was not only recognized and utilized by politics on a mass-media scale, but also by the church in pursuing its strategies of power. The most famous illusion space at Sacro Monte, the *Calvary*, was created in 1518–1522 by Gaudenzio Ferrari, whom his contemporaries put on a par with Raphael, Michelangelo, and Leonardo *(Ill. 1)*. The style of his early work was characterized by manneristic delicate grace, but in Varallo the proportions of Ferrari's figures change for greater realism, his palette glows with natural colors, and some of his life-size, terracotta figures wear real clothes, have real hair, and glass eyes. This technique of representation creates the illusion of fusing a colorful, three-dimensional foreground of figures — a variety of *faux terrain* — with a two-dimensional fresco in the background. Proportions, colors, and particularly the artist's dramatic and highly emotional, even ecstatic, representation of events send out a forceful appeal to the observer. In this work, Ferrari is completely in agreement with contemporary art theory, which viewed mental fervour (*moto: Lomazzo*) in particular as the basis of artistic creation. At night, the chapels were lit by torches, which further enhanced the illusion of living impressions. This example of a Mixed Reality used all means available at the time to create the deception of real presence with the effect that the monks, who guided the pilgrims around the complex, were constantly obliged to remind the visitors that this was not the real Jerusalem. It was so successful that in the following years a whole series of *Sacri Monti* were constructed and opened, not least with the aim of erecting an *image wall* against the approaching Reformation. These media dinosaurs then spread from Italy to France, Portugal, Spain, Mexico, and finally, even to South America.

Ill. 1: Ferrari, Sacro Monte di Varallo, 1518-1522.

The idea of merging physical space with a space of illusion goes back at least as far as classical antiquity, to the wall paintings in Roman and Pompeiian villas, such as the *Villa dei Misteri*, but this is certainly not the starting point of this lineage of images; nor is the evolution of media of illusion or immersion its end. In this chamber dedicated to the cult of Dionysos, used by his followers for rites of initiation and other rituals, the visitor stands surrounded by painted life-size, realistic figures, who appear to address him/her and also each other, wall-to-wall communication across the intervening physical space. This image space functions rather a lock on a canal: it allows gods and mythical beings to pass through into the physical space and, in the other direction, like a modern Mixed Reality, leads human actors and observers onto the same image level. This strategy of immersion, which again is executed here with the maximum of media means available at that time, also "opens up" the boundary with the image space, integrates the observers in the scene, and conducts them towards the central ritual of the mystery cult — the state of being emotionally, even ecstatically, engaged and absorbed. History has shown that there is permanent cross-fertilization between large-scale spaces of illusion that fully integrate the human body (360°frescoes, the panorama, Stereopticon, Cinéorama, IMAX cinemas, or the CAVEs) and small-scale images positioned immediately in front of the eyes (peepshows of the 17th century, stereoscopes, stereoscopic television, Sensorama, or HMDs).[7]

Immersion is produced when art work and image apparatus converge, or when the message and the medium form an almost inseparable unit. Then, in a moment of calculated "totalization", the art work, for a limited time, permits conscious perception to become unconscious illusion. Looking back over the argument, the enduring aim of the immersion principle is to force the illusive

Akademie Verlag; KEMP, Martin. 2000. *Visualisations*: The Nature Book of Art and Science. Berkeley: Univ. California Press.

[5] http://web.mit.edu/I-m/

[6] BORDINI, Silvia. 1984. *Storia del Panorama*: La visione totale nella pittura del XIX secolo. Rome: Officina Ed.

[7] Cf. GRAU, Oliver: Virtual Art: From Illusion to Immersion, Cambridge: MIT Press 2002 (in press)

medium beneath the viewers' perception threshold, and thus to maximise the conveyed message's intensity. The medium becomes invisible. Immersion is undoubtedly key to any understanding of the development of media, even though the concept appears somewhat opaque and contradictory. Obviously, there is not a simple relationship of "either–or" between critical distance and immersion; the relations are many facetted, closely intertwined, dialectical, in part contradictory, and certainly highly dependent on the disposition of the observer and his/her media competence, which has grown in the course of history. Immersion can be an intellectually stimulating process; however, in the present as in the past, in most cases immersion is mentally absorbing and a process, a change, a passage from one mental state to another. It is characterized by diminishing critical distance to what is seen and increasing emotional involvement in what is happening. Aesthetic experience, which builds on concepts of spaces for thought or theories of distance, tend to be undermined by strategies of immersion, Visions of new media of illusion, whether for science and technology or for art, are, in the case of art, not merely reactions to technological innovations but art often plays a seminal role in their development.

The gain in power of suggestion is thus revealed as primary goal and core motivation in the development of new media of illusion. This appears to be the main force driving their developers, who, with new potential for suggestion, enhance power over the observers in order to erect the next new regime of perception. Panorama, film, and computer image displays are aggregates of continually changing machines, forms of organization, and materials; in spite of all efforts at standardization seldom stable but always driven by the fascination of increasing the illusion. We see a never-ending stream of phenomena, which, on closer scrutiny even of supposedly secure entities, such as cinema, prove to be just elements that continually regroup in a kaleidoscope of evolutionary art media development. An overview of their historical development demonstrates the monumental dimensions of the energy involved in the search for and production of ever-new spaces of illusion. What visual strategies and which kinds of interface are used today to produce immersion?

Visions

a. Alina Plewe: Ultima Ratio

With *Ultima Ratio* Daniela Alina Plewe pursues an ambitious goal: she attempts to generate a visual language for argumentation as demanded by a particular situation, which particularly represents the logic and internal arguments of the protagonists on which future action will rest *(Ill. 2)*. The basic aesthetic experience of *Ultima Ratio* is conflict. Once involved, the visitor must make a choice, actively and creatively, to deal with an ambivalent situation. For example, a visitor involved in a well-known dramatic situation is asked, Should Hamlet kill Claudius while he is praying? Hamlet wants to revenge the assassination of his father, an argument for, but contemporary beliefs said that if one was killed while at prayer, one would go straight to heaven — an argument against. Pro and contra arguments are visualized, can be weighed or automatically evaluated. *Ultima Ratio*'s databank stores various types of conflicts from life and literature plus the input from the installation's visitors. It is a flexible system of interactivity of theoretically limitless complexity, which is expanded by the discourse and modifications of the users. In *Ultima Ratio*, the visitors stand under a disk-shaped projection screen with a radius of several meters — rather like a ceiling panorama. An eyetracker is the natural interface to the virtual theater of strategic imaged arguments, which follows the visitor's gaze and enables the diagrams to be distorted according to any change in the observer's perspective. What *Ultima Ratio* offers is a first glimpse of an open system of theater, which allows the audience to participate interactively at a high level of abstraction and dramaturgy in the solution of open conflict.

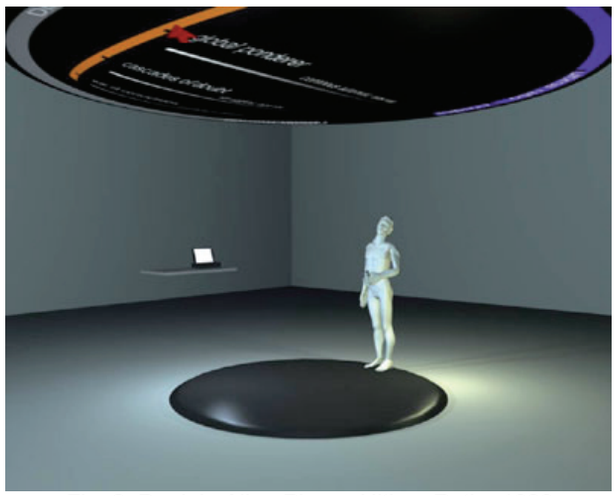

Fig. 2: Daniela Alina Plewe, Ultima Ratio, 1999.

b. Simon Penny: Traces

Above all, it is global access to and exchange of images, which Net art currently aims at, that the technique of telepresence enhances and this opens up a new, data-mediated epistemology — a paradox. Simon Penny's work in progress *Traces* makes the category of the interface absolute and, for the first time, creates a public, translocational, immersive image space. Four infrared stereo cameras transform in real time the users' contours into three-dimensional representations, which Penny envisages will be seen thousands of kilometers away in polysensorialy expanded image spaces. Traces marks an important stage in the development of telepresence art. It does not offer worlds of computer graphic images or navigation interfaces. Instead, users enter virtual image spaces to interact with gauzy traces of light that represent the dynamics and volumes of human bodies *(Ill. 3)*.

Ill. 3: Simon Penny: Traces, 1999.

Penny envisages that "interactions will take the form of real-time collaborative sculpturing with light, created through dancing with telematic partners."[8] Distance and proximity coincide in real time

[8] http://imk.gmd.de/docs/ww/mars/proj1_4.mhtml

giving rise to a paradox: *I am there where I am not and experience sensory proof of this against my better judgment.*

c. Genetic Art and the Net

Recently, artist-scientists such as Thomas Ray, Christa Sommerer, and Jane Prophet have begun to simulate processes of life: evolution, breeding, and selection have become methods for creating artworks. With the help of genetic algorithms, image worlds generated by computers are endowed with the semblance of being alive. The debate on genetics and artificial life conducted at first within the life sciences[9] was later complemented by models, visions, and images developed by artists, which have become reference points and catalysts in this controversial debate. Accessed via a variety of interfaces, the Internet is conceived of as a living sphere. To provide a testing ground for the complex systems and origins of life, Sommerer and Mignonneau propose a web-based environment, which, like their work *VERBARIUM*, allows participatory and interactive access via the Net.[10] Thomas Ray's *Netlife* goes even further: he predicts that artificial intelligence in machines will arise in the Internet. *Netlife*, says Ray, will be able to go, physically and autonomously, anywhere on the planet in a matter of milliseconds. The stream of data will be direct sensory experience for this species; although one wonders what sensorium Ray sees as being activated here. Digital, nonmaterial environmental conditions prevent humans from being able to imagine how such an existence "feels." Thus the ancient concept that produced Mixed Realities even in classical times, has now given way to a uniform, common digital sphere— whose animated image worlds are defined as real by the A-Life enthusiasts — that is ubiquitous and seemingly alive. Media archaeology has excavated a wealth of experiments and designs, which failed to become established but, nevertheless, left their mark on the development of art media. That which was realized, or has survived, represents but a tiny fraction of the imaginings that all tell us something, often something unsettling, about the utopian image dreams of their epochs.

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Artifacting New Media;Towards a Historiography of New Media

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ABSTRACT

Constructing an art history of new media in terms of extent historiographical practice is problematized by rapid change, new epistemic structures, and a broad heterogeny of forms. This essay considers analytical strategies that are structurally reflective of new media through Manovich's principles of new media, Ippolito's Variable Media Initiative, and Hakim Bey.

When regarding an art history of the technological age, questions arise to the structure of critical and theoretical strategies addressing significant changes in cultural context or technological innovation. The historiographical question of shifts in artistic practice or representation during a period of rapid technological change creates discursive and analytical challenges for the scholar or theorist. How can there be discussion about bodies of work that are currently in a state of constant revision or stages of nascent development? The lag between practice and criticism (if a distinction can be made) accompanying the advent of video art in the 60's and 70's is more pronounced regarding contemporary trends of technological acceleration in the arts, especially in New Media. The issues in addressing historigraphical praxis in contemporary art are complicated by the rapid emergence and mutation of genres and memes within computer-based (digital) art and culture and other technological genres. The millennial environment of change questions the viability of any master narrative or common taxonomy/grammar when the dynamic nature of the subject in question suggests the need for constant in situ revision of analytical methodologies. To address the current mercuric nature of technological culture, modes of analysis are required that reconsider engagement with the subject incorporating qualities and strategies in its discourse that reflect those of its 'objects' of inquiry.

When looking at historiographic methodologies regarding new media art, one must consider the contextual frame within which previous genres have been placed. These frames are often cited as 'movements', but many art history texts begin situating artistic practice within a technological framework after the inception of the cameras lucida and obscura. Such practices often overshadow the more complex cultural matrix within which the work is located. It would be reasonable to assume that scholars like Newhall, by virtue of their given field of study, would have some emphasis on the developments of photographic technology [1]. However, such a focused approach elides the fluidity of change and diversity of fin de millennium technological art.

Contemporary practices of the late 20th century have had the luxury of possessing relatively well-defined technological shifts; one of these being that of video art in the 1960's. However, due to the multivalent nature of New Media and other technological artforms [2], the technical and cultural engagement with the subject varies widely, changes rapidly, and creates increasingly porous boundaries between previously distinct disciplines such as robotics, telepresence, performance art, net art, and so on. What may be needed are approaches to the analysis and criticism of new media art that reflect the structural aspects or principles of the works themselves.

An ongoing thread in the discussion of critical and historiographic practices of new media art relates to whether any meaningful discussion can be achieved with extant vocabularies. Artists participating in the Walker Art Center's 1998 Shock of the View maillist [3], argued for the creation of new descriptors for this field of media, at which time many artists were, and are crafting neologisms to attempt to describe attributes of their work. An example is virus artist Joseph Nechvatal, who has defined terms like "Viractual", and "Cybist" [4] in conjunction with his work, creating a localized discursive strategy. In fact, during an early February 2002 CRUMB new media curation online maillist discussion of new taxonomies, Steve Dietz paraphrased Hakim Bey, suggesting that in talking about mutable genres, what might be needed is a "Temporary Autonomous Nomenclature"[5] for discussion of new media works at given times. Such tactics would localize discourse within a tightly defined context. Conversely, the usefulness of ad hoc vocabularies must balance their usefulness with the potential for a kind of taxonomic determinism that would imply a need for expanded vocabularies based upon fashion and affectation.

Neologisms and expanded terminologies may be of some use in the critical analysis of emergent technological art forms, but such verbal tools are but tactical means of expressing larger strategies. As the topic at hand is the consideration of critical methodologies that reflect properties of the medium itself, it is crucial to think about the criteria under which any historiological framework of new media analysis can be conceived. Perhaps we could consider the distinctive qualities of new media as David Antin did in his seminal essay on video art (6) Does new media art have qualities that distinguishes it from previous forms, and if so, what might they be?.

Lev Manovich, in his recent book, The Language of New Media, suggests five principles of new media specific to the nature of New Media [7]. The first is numerical representation, or the digital quality of new media. Second is modularity; in that new media works are not continuous, but made up of modular chunks of information, program code, and media 'lexia'. Next is automation; the use of computational processes in New Media. The fourth is variability, or that New Media has large sets of possible representations of the same work. And, the last is transcoding, the quality of New Media having multiple translated levels of meaning at human and machine levels, depending on their level of interpretation. Although aan exploration of these principles is beyond the scope of this discussion, we can ponder these distinctions as well as some of the resultant properties of New Media art including media ephemerality and rapidly shifting representational/developmental methods (closely related to variability). These could be considered as building blocks of a historiological methodology of new media.

Taking a cue from the modularity principle, syntax and distinctions can be essential components in a methodology, but only components to be placed in larger systemic contexts. To consider a synthesis of cultural events and artifacts as 'objects', to borrow the programming sense of the word, in the construction of possible critical strategies. One example could take a localized cultural study of the work in context of its milieu and time of creation in terms of the surrounding social/political/economic/etc matrix in which it operates. Some methods for such an approach could include consensual ad hoc definitions and nomenclature adopted for the examination of specific works or

events. Such an approach would reflect the modularity and variability of new media, but also reveals limitations by virtue of its very specificity.

Although localized studies can offer much to the understanding of new media works in a given context, the dynamic nature of genres such as net art render such approaches problematic. A conversation with Christiane Paul [8] revealed an agreement that much contemporary technological art, especially those using recently emergent technologies, are in a perpetual state of 'beta'. In these 'works', there is an ongoing process of project development of an indeterminate length and frequency, making it nearly impossible to quantify many projects as discrete bodies of work. This calls to mind the metaphor about trying to nail half-congealed gelatine to a wall. Of course, the gesture itself is futile, as the gelatinous mass slides downward a certain amount with the driving of each nail, but it results in a series of records (nails) documenting the epistemic arc, or trace, of the wayward confection in its travel.

Although this analogy is a fanciful one, it offers insight into how one could document ongoing works, and especially evolving net art. In the example, a process was studied at intervals and defined as periodic or in terms of significant events and developments over that period. The resulting epistemic arc for that body of work could be revealed through such a method. This interstitial methodology could be used to create maps for interpretation of the development of process- or conceptually-based artwork. The cultural context of a project would be examined at intervals, opening a larger discursive matrix, arcing across time and describing the procedural nature of the work.

If the analogy of documenting a process through interstitial analysis is taken further, the analysis could become an ongoing dynamic process in itself. This differs from traditional historiographical methods in that the analytical process would not generate discrete documents over time. The result would be a continually revised record or set of documents, databases, etc. that would evolve as a singular or collaborative process. This process would parallel the procedural nature of the work under scrutiny. Simple examples would be maillists like CRUMB or Thingist [9] that are archived as accretive databases. However, more advanced methods could expand in complexity to collective online journals that differ in that they would exhibit a relatively tight focus and relatively little hierarchy. To take this example one step further, my metaphor would incorporate some of Manovich's principles of new media, such as modularity, automation, or variability to atomize critical texts into smaller lexial chunks and media clips, that would be continually revised or expanded by the scholar involved or parsed by algorithmic means [10]. Taken to logical extremes, this methodology would use parasitic databases linked to an online work that would continually update the documentation in tandem with the scholar's interaction with the document. Such an approach would tightly integrate principles of new media practice within its own critical analysis[11].

Variability, as defined by Manovich states that a new media work can exist in "different, potentially infinite versions"[12] given the technological/representational context under which the work is experienced. John Ippolito has interpreted variability within curatorial practice in creating the Variable Media Initiative[13]. Here, parametric guidelines are created for the representation of a given work. A case study is that of a Dan Flavin fluorescent work which experienced failure of one of its tubes. To allow for upkeep, spare fluorescent tubes were stored for the more obscure colors, but by the late 90's, a common tubes at the time of inception had been discontinued. Therefore, the Variable Media Initiative works with artists to determine guidelines for display and curation, not in antiquarian terms, but in terms of the conceptual representation of works.

Contemporary culture includes 'variable' works of art, taxonomies, and curatorial practices. A case could be made for a variable new media art historiography/epistemology that adjusts its strategies to fit the localized context of a given piece of work and its context. This approach at first glance may not seem novel, but this strategy could allow for multiple, simultaneous interpretations that could vary over time as the work's context given cultural and intellectual environment changes. Perhaps to follow from Bey to Dietz, one could possibly extrapolate a form of Temporary Autonomous Epistemology [14] to allow for localized analysis of works over periods of time.

I have considered the construction of critical and historiographic strategies vis-a-vis the changes in the cultural environment brought about by new media art. The alternate analytical methods discussed here are far from encyclopedic, and are suggested as possibilities for practices that may more aptly resemble the cultural forms that they address. The desire for new taxonomies stems from the emergence of cultural forms which can be slippery to classify, but ask for vocabulary and syntax to expand the discussion of technological art. But to more aptly describe often vague genres like new media, possibilities arise that conventional metanarratives may fail, resulting in dynamic histories and tightly contextualized discourse. Is Jones correct in saying that art is indefensible[15], and that new media art is odd in that it eludes clear boundaries of genre and classification? Some artists would argue that this is the case. But there will be those performing new media arts critique who may require historiological/theoretical strategies to better articulate their ideas. In so doing, scholars will need to consider these epistemological questions in terms of the nature of the subject under scrutiny. As technological art and new media continues to develop in distinctive ways, equally innovative strategies will be required to address the dynamic structures of these cultural forms.

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Natural History Cycles.

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Abstract

Problems faced at a third world countries like Mexico to start innovative and propositive projects that involve new media and new ways of thinking. Ads an example the Creative Residencies Program, which fosters the exchange of ideas among scientists, artists, scientific promoters and other individuals through the development of individual artistic projects related to the Natural History Museum of Mexico City's (MNHCM) three key areas of interest: science, environment and art. The museum's first project by Ariel Guzik developed the Plasmath Mirror and the Harmonic Spectral Resonator. Other submited projects were Eric Olivares Lira Global heating videoinstalation and Mariana Dellkamp digital photographs about medical archives and electronic microscope images. Due to political and economical issues, the program couldn't stand still and now we plan to rescue it in other places.

Introduction

Things have their own time and place, over the dreams, reality strikes trough cycles that open and cycles that close. Sometimes, what has been thought, as a wide and possibly interconnected cycle becomes shorter than it was planned, or it really crashes, becomes closed very fast and there is only left a wink into what it could have been.

Year 2000, San Luis Potosi Mexican desert, middle of nowhere there was installed provisionally the Spectral Harmonic Resonator (REA by its Spanish initials), it was a visual and sound contrast with the surroundings, where there rises thousands of Organos (organs), Gobernadoras (female governors) and Biznagas (round cactuses). An instrument created by Ariel Guzik that had born in the arms of the **Creative Residencies** Program that was beginning to reinforce its structure at Mexico City's Natural History museum.

Today, the program that rise little by little, going slower than we wish to, because it faced a lack of resources due to its innovative nature in a not fertile soil has almost disappeared. Despite Guzik is still working in the assigned place (at least at august 2002 beginnings).

Because of Political troubles that I'm not going to speak about here, the museum director, Marco Barrera, was asked to resign, he left the museum last July which unfortunately means the disintegration of Residencies program. Although it was central to the new museum approach, it was also depending on personal wills.

We wanted, a laboratory, to exchange ideas between scientist, artists, science promoters and public; where creative individual projects developed the interrelation between arts and sciences, following the interests of the museum: ecology, nature and natural history. We tried to make the museum become again a reference point in national panorama while generating a public and internal discussion around relations between art, culture and science, trough multicultural and transdisciplinary statements.

Any way a fragile structure and a construction built upon individual efforts and not institutional politics have made this program almost a simple illusion.

The problem stands precisely in this point a nation that prioresses the attention of global capital demands, is forced to follow up a unequal development, government and private attention is on short term, material and practical goals. Innovation, education and culture are everyday harder to succeed, and if it doesn't produce tangible things, not a single program can be supported.

I'm not complaining about the eternal lack of money, which we already knew was in the horizon, but lack of vision. It is clear that new technologies haven't helped to close the gap between first world countries and those that are not. Talking straight, NT have become a tool to make that a wider gap because there are not resources to assure the accessibility on them, I'm not talking about money but about interest and effort to support program until it can be embraced and appropriated by the community.

The beginnings

Thirty four years from its opening, Natural History museum (MHN) was left out without discourse, it had lost movement and credibility, it wasn't any more a reference for contemporary childhood, as it has been for earlier generations

With this in mind, in 1998 started a renovation project that intended to give the museum solid objectives, around for lines: Preservation, investigation, promotion and integration. Looking forward to break old practices and design new ways of public participation, getting collective benefits, it was created this program, searching understanding between those fields and letting Mexicans and human a better development.

Reflections brought out the necessity of renewing educational and knowledge preservation institutions, transforming them into new paradigms and to contemporary ways of information exchange. We intended to build a live and dynamic museum trough participation of diverse groups of Mexican society and Mexico City population in particular.

From the very beginnings we wanted to give the program a way that restored historical values of Mexican society, one of them was the Tequio, a solidarity scheme of participation and retribution based upon barter and inherited from prehispanic cultures.

Residents would contribute to the Museum by creating work for its collections and/or developing processes which will enhance the Museum's capacity to respond to its' visitors interests in diverse fields and issues. A criterion to be considered at evaluation processes as a qualitative criterion rather than a quantitative one.

The project and its importance

Creative Residencies fostered the exchange of ideas among scientists, artists, scientific promoters and other individuals through the development of individual artistic projects related to the Natural History Museum of Mexico City's (MNH) three key areas of interest: science, environment and art.

The MNH's references for this program were the Exploratorium museum in San Francisco, California, the Banff Center for the Arts in Canada and the Zentrum für Kunst und Media ZKM in Germany. We initiated our creative residency program with the museum's first project called the Expolab, with two main components, the Plasmath Mirror and the Harmonic Spectral Resonator.

REA is landscapes project & instrument which juxtaposes art and science by creating an instrument that is controlled by natural energies such as wind, humidity, rain, sunlight, and temperature. The intensity and changes that these elements undergo inform the instrument which, in a sense, sculptures, decodes and transforms that information into a sound, associated to an equation that displays the rhythm and harmony inherent to natural forces.

Creative Residencies intended to annually produce three short-term projects (three months each) and a longer-term project lasting one-year. Both renewable and conducted within a workshop space of 600 square meters. A space open to the public from a 200 square meter area used to exhibit creative works in progress and their scientific underpinnings, ie. contextualized exhibits.

The Museum would have provided a space equipped with different inputs so that each project can adapt the space to its particular necessities. Additionally, the Museum wold have also provide a conference room for the exchange of knowledge and information, an exhibit room to showcase the results, and institutional support to obtain necessary materials and resources for specific projects.

Each project should have involved systematic research and methodology and should have been able to nurture the Museum in two ways: 1) by interacting with Museum visitors through conferences and 2) by interacting with the museographic infrastructure of the museum and/or its collections.

The Museum designed and intended to support those projects to expand the individual's capacity to understand and to challenge existing co-relations between art and science. We started on our belief that there are moments, in which science uses art to build a scientific theory that, sooner or later, results in the existence of new objects and actions. On the other hand, it is unquestionable that tools for the production of art increasingly stem from the proliferation of technology and, most importantly, from a vastly enhanced scientific knowledge base which provides the artist with new fields of action and new elements for artistic intuition. The combination of both of these areas can give culture a new meaning and foster a better understanding of both fields by providing diverse forums for public participation and contextualization

Goal

To promote research, understanding, as well as facilitate the exchange of knowledge between traditionally opposed fields of study – science and art – in an interdisciplinary way.

Specific objectives

• Enhance scientific knowledge and understanding of contemporary art.

• Establish a permanent forum in the Museum to develop creative projects that involve art, science and culture.

• Provide the museum visitor with multiple opportunities to interact in a dynamic and direct way with the artist-in-residence through work-in-progress showings as well as conferences, exhibitions and workshops.

• Assist the MHNCM with the conservation of its collections, the renovation and preservation of its installations, as well as its legacy through interaction with diverse audiences.

Residents and residents to be

For the program, projects should stem from the following areas:

A Science	B Art	C Media
A1 Technological development A2 Education	B1 Visual arts B2 Literature B3 Music B4 Drama	C1 Education C2 Interactive C3 Creative

Ariel Guzik.

Ariel Guzik is an interdisciplinary creator. He has worked for more than 20 years creating sound artifacts ruled by natural forces, phenomena as resonance, electricity and magnetism are his field of action. In his every day life he is also iridiologist, musician and writer. The research work that he has done – always surrounded by a team- has brought him to build the Espejo Plashmat and the Harmonic Spectral Resonator (REA) among other pieces.

Espejo Plasmath is electronic art, scientific research, sculpture, medicine and technology; it fuses with natural surroundings, not by the meanings of camouflage but by the integration trough sound.

Plasmath it's connected through cables and electrodes to the surroundings and is in the dessert where it's better adapted. With its sound the desert grows and gets into human senses in other ways. As its strings, that vibrate by sympathy to the one at the side, human being vibrates because of the sound it produce and every living self around feels those vibrations. Cactus rules how this instrument should sound by the way of the information that the Espejo reads from their internal vibration.

REA is a sound sculpture with several sound generator pieces that react to the nature stimulus: wind strength, sunlight intensity, temperature and ambiance humidity. REA relates heat, light and wind variation to a very high frequency wave that its constantly moving, a group of resonators vibrates with the harmonic and sub harmonics of this wave and resonate when the wave reach a specific value that is harmonically related to its numeric structure.

Its a scientific work as well as a artistic one, in the work, low budget technologies are used as they are easier to get in Mexico, than sophisticated digital systems. It's a posture facing globalization technologies and development.

Gibran Cervantes.

A young Mexican percussionist with the intention to create new musical instruments that borne in Gibrán when he was intending to find a sutile and ordered language of sounds expressed by the hands, emotions and conscience, that could fulfill his expressive needs.

The Urukúngolo is a result of some tests and experiments done with existing instruments (music arches), in the search of new sound and view projections. Slowly the materials used for the instrument construction as guajes, thread and bamboo became a monumental sculpture were music knits with body movement, transforming the player into a dancer at the same time. The result is a spider net of human dimensions.

The Colonófono, second instrument of the series was started at the laboratory and now its continued at Xalapa City, where Gibran lives since 2001, originally was a harmonic support for the Urukúngolo with long notes and accords.

Electronic equipment was experimented to find the desired effect. A sinusoidal wave generator, a amplifier and a speaker placed near a guaje helped to generate frequencies that are capable to be in resonance with it and adding a involving generator the sound can be varied.

Pablo Castillo

By the means of assemblage Pablo Castillo (Mexico 1966), builds fantastic beings. Starting with recycled objects, industrial material, plastic in the garbage and metallic pieces recreates the figures, antique and futuristic at the same time, of insects.

Pablo observes insects and detects among manufactured object parts that can be elements of their body. Materials and artifacts that doesn't belong to natural cycle and destroy the ecological equilibrium point out the differences between human invention and natural evolution, but also point out their similarities. At the end the physic laws that rule natural design are the same that rule human design. The same principles that make a cricket jump let a machine spring function

Following postulates of what should be the solid waste management: recover, reuse and recycle, Pablo lets us testify the creative capabilities of man and nature, but what its more important, their possibility of gathering.

Artists to be invited as residents

1.- Eduardo Rincón. Biologist, sculptor and painter. He is actually developing a project around the amate – a special kind of tree – its germination process and rescue, trough the process he uses the plant parts to produce paintings and objects

2. - Fernando Palma. Engineer and sculptor. Specialized in mechatronics and robotics. He does mechatronic sculptures that refer to prehispanic cultures and the way they relate to the natural surroundings.

3. - Daniel Rivera. Designer and plastic artist. He is actually working with biologists from Biology Institute at the UNAM around the genetic code construction he is looking forward to develop a project that combines different genetic codes into grass to produce special kind of grass.

4. - Fernando Llanos. Videographer and net artist. He has just finished a new cycle of videomails. His point of view is ironical to the spaces he is working on. He intended to produce a program of videos that interact with museum dioramas.

5. - Mariana Dellekamp. Photographer. She has developed several projects on digital image. She is involved in virtual body modifications to point out the human intervention into the body and the cultural results from a social point of view. She is making photographs trough precision instruments as microscopes.

6. - Manuel Rocha. Musician and cultural promoter He is working with sound art projects and annually organizes the Sound art festival at x Teresa museum. He builds sound installations

7. - Nestor Batres. Engineer and sculptor. Design videogame programs and mechanical participating sculptures.

8. - Eric Olivares. Designer and videographer. His project deals with climate and Global heating phenomena. He was going to develop a videoinstalation that consists in a long time videoprojection of an iceberg melting until passers by become metaphorically downed and in which the animated action is ruled by the real temperature information at the site of the installation.

9.- Salvador Alanís. Poet and digital designer. Works interdisciplinary. He is interested in challenging the scientific method and the science fields of study. He worked a hypnosis project.

Intended internal structure

Creative Residencies was going to be operated independently of the Museum but not autonomously. The residencies would have operate under a team that develops the day-to-day tasks and lines of communication coordinates the residents in their investigation and creative process. This team would establish communication channels between residents, museum staff and each department within the Museum (administration, educational and visitor services), as well as between residents, Museum visitors and neighboring institutions. The team also oversees each residency's production, beginning with the invitation and selection of the artist-in-residence to project implementation and evaluation. This coordination includes the organization of special events, as well as other marketing and promotional projects designed to enhance the public's awareness of the residency.

This team should comprise four people: the coordinator, an assistant, a lab technician and a secretary/program assistant. Each project will involve the resident and an assistant, as needed.

The MHNCM would have provide permanent support as well as advise the team in two areas: administration, including the project's operating budget, and defining the project's internal politics and viability.

Each project was going to be selected through a five-person advisory committee: two Museum representatives from the investigation and museography departments and three outside members from scientific, cultural and/or artistic fields.

Selection of each artist-in-residence wold have involve extensive research and a direct invitation, by the Museum, to specific artists – a selection process that might have change in the future to an open selection process whereby artists will be invited to submit their proposals.

What we couldn't do

- To produce 4 projects annually , 3 short-term and one long- term.
- To produce one exhibition and/or event for each short-term project at the conclusion of each project. This would result in three events.

• To showcase the results of the long-term project at the conclusion of the project.

• To produce an exhibit which contextualizes and reports back on the process and results of the long-term project.

• To conduct five workshops which promote interaction between the artists-in-residence, their work and museum visitors (one workshop for each short-term project and two for the long-term project).

• To program nine public events or presentations throughout the year (two for each short-term project and three for the long- term project).

• To record the activities and the process by producing a CD-ROM of the short and long-term projects.

• To contribute to the Museum's renovation project as well as to enhance its national and international reputation.

• Design and build a workshop laboratory with study cubicles and worktables. Include equipment for electronic systems elaboration; an audio recording cabin and a dark room to develop photos. The place should have inputs for the installation of hard machinery such as drills and welding tools: gas installation to manage basic chemical products, and refrigeration to experiment with horticultural and agricultural materials.

The end

Ironically last act of the program, was planned to be a mark in time, as a metaphorical beginning of the residencies – although it had been open and in exhibition since January 2001– trough the massive recognition of the new museum thinking. Last may 9th was the date when the museum saw the biggest amount of people attending to it in long long time. Maybe since 1971, when the lunar stone donated by NASA was brought, the MHN had not seen so many people at once. It was a concert screening a record of the electronic collective *Nopal beat*, there were videoprojections on the outside buildings and there were heard countless voices of young people rediscovering the museum, a lot of them discovering it for the first time.

Why a music event in that context? To be a catalyst for the new public, to open space for dialogue and to bring economical means to the program. To begin the contacts between private initiatives in the context of culture such as MEXARTFEST, an independent cultural festival as the frame of the event, that presented the electronic group within their actions towards the *Fest,* that by the way was presented at Nagoya and Tokyo in August.

We wanted to begin those understanding roads, come across generation gaps and start new landscapes, recognize human diversity as an expression of nature diversity and standing for new cultural ecosystems. Unfortunately we just could see the top of the iceberg, we hope we can continue this effort in other places to seize the effort and challenge, with the most pure scientific spirit, one more time, knowledge and its way.

Meanwhile this was happening, struggle between political parties, and economical projects continued, education budget was once again resized for worse. The interest of the Environment Secretariat of Mexico's capital –to which the museum belongs– was on to rise an absurd second floor for vehicle transit at one of the few freeways that crosses the city, not understanding or even taking care to answer an easy question: why does the secretariat needs a museum?

Terrorist Video and the New Iconoclasm in Art after 11. September

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Abstract

Iconoclastic violence acquired a new form in the recent conflict with terrorism and the war in Afghanistan. The fascination of terrorists with the home video and with "live" or "real time" presentations on TV has all the attributes of new iconoclasm. Its goal is to defeat the most powerful images in our time, the film and the TV image. These images may not be holly as in the past but they bear the same power and control over our feelings and actions. While the Gulf war CNN spectacle represented our power over the enemy by new means of satellite broadcasting, the recent "minimalist" and "low-tech" terrorist video tapes have overthrown this media power with the use of its own weapons - moving and real time images. The new iconoclasm of the home video poses many challenges to contemporary art that are analyzed in terms of iconoclastic issues of power, authenticity, transcendence and representation.

1. Media and violence: innocent home videos

The strange affinity between video and terrorism that appeared several times after the events of 11.September showed that the relationship between war and media has changed since the Gulf War media spectacle. The recent conflict with terrorism has rather strange media and technology side effects that could be described as iconoclastic. The machines and media started to serve completely odd and often destructive ends. Airplanes become bombs, cell phones serve to communicate with the nether world of victims' dreadful last calls, and the innocent and private character of home video is elevated to an espionage movie genre, mean of propaganda and destruction.

The famous terrorist videotapes of Usama bin Ladin (UBL) that represent this new function of the home video actually fulfill the dream of every amateur video maker who sends his films to "America's funniest home videos" or similar programs. Finally, here is a genre of home videos that can enter the prime time of every TV station in the world. Amateur video, in UBL's interpretation, is not only about "shooting" something on your own, but enabling others to record something previously unseen by choosing the right targets and means of destruction.

While the Gulf War is remembered for the spectacular nature of the televised destruction of Iraq, this recent war will be remembered for its encounters with home video. UBL's videos have also managed to exceed the difference between political analysis and film criticism. They literally merged in the discussions about whether the videos he was sending to different TV stations are propaganda or authentic. It closely resembles the general discussions about video's authenticity compared to other visual media.

The details from UBL's videos like mountains, meaning of the neutral background or his supposedly tired and sick look became a serious field of inquiry. The information from the battlefield were actually less important than these long analyses of what is real and what is digitally altered in these videos and for what reason. Such a complicated espionage plot with hidden secret codes makes the whole amateur video look like an art movie with a complicated system of references. UBL became also known for his steganographic techniques of using the digits of pornographic pictures on the web to convey hidden messages. It is fascinating to follow how these analyses of terrorist videos and pictures evolve into sophisticated art theories. Terrorist "video art" has not only intricate and complex system of references and subtexts but it also has interactive abilities. There are sleeping terrorists similar to viewers of art movies that are waiting for the coded message somewhere in the world to act.

But are these coded messages really hidden in these pictures and videos? After all, we are dealing with home video and porno pictures that by definition reveal much more that they hide even when they are not used by a terrorist. Porno pictures have a very ambiguous relation to violence and maybe UBL only makes apparent what was already present there. The narcissistic, confessional and reality TV characteristics of home videos were closely connected to this medium long before UBL made his confession on one of the most publicized videotape in December 2001. From this perspective, the (mis)use of media and technology by terrorism seems less odd than the actual fascination of media with terrorism and violence in general.

2. Terrorist “videoart” and Iconoclasm

What still remains interesting about the conflict with terrorism is how it has shifted into this cross-reflection between film, news coverage and home video that slowly blur and blend together. One of the reasons could be that UBL's cinema has a very close link to the rules of Dogme 95: shooting is done on location without props and sets, the sound is recorded together with the image, the camera is handheld, no special effects, filters or even lighting. UBL's films could easily obtain a Dogme certificate because they are in accordance with all the ten rules known as "The Vow of Chastity."

A shot with all its imperfections and surprises is at the core of this film making. We can even hear the cameraman breathing in the December 2001 terrorist video, which makes the whole movie a very direct and even physical experience. The cameraman's breathing, whispering or even talking changes the video-recording into an even more pure version of Dogme 95.

The realism of this most known UBL video consists of the physical presence of the cameraman, that changes the simple viewers into a real witnesses of the "leader", breathing together with the cameraman. These purist rules and ideals, these shots without cuttings refusing visual manipulations, express more general terrorist attitudes and visions of the world than mere violence and destructive coded messages.

UBL's videos are simply a continuation of the iconoclast war by visual means. Instead of the destruction of images we have images that destroy their objects, pictures that were made in order to destroy what they present, and by that become obsolete. For example, there is the destruction of the two Buddha statues in Bamiyan. It was done with the intention of destroying visual representations and idols but at the same time this destruction was recorded by the Taliban itself. All Usama bin Ladin´s video recordings are images of the destruction of images, idols and symbols, most notably the Pentagon and the WTC. It is not clear, however, if this is still just terrorism with the use of a camera or real terrorist video art, a revival of the auto-destructive art project that surpass the difference between image and event, representation and presentation. Simple viewing becomes witnessing, in the strong sense, as in the case of the iconoclast shots of the September epiphany of destruction. Not only because this was recorded in real time but also directly broadcast.

These "live" home videos of the WTC attack deteriorate our common understanding of the function of images. Instead of simulation of possible worlds or augmentation of our visual possibilities and other voyeuristic pleasures, we were confronted with images showing what we thought to be impossible and what became in one moment literal and even trivial. This technology in the service of absolute presence via destruction was not only performed by the terrorist but also forced upon the victims that were sharing their last moments over cell phones. It is actually a suicidal attack of the media themselves. Suddenly there are images that represent their truth and function only by destroying themselves. They do not mediate anything except their own destruction.

The relation between the iconoclast esthetics of the home video and the terrorism is not accidental and that is the reason why we use the expression "terrorist video art". It is not meant as disrespect to art or to the victims but as a general statement that every political ideology embraces certain esthetics that reveal more about its character than a complex political and social analysis. As Walter Benjamin showed in the opposition between "politicization of art" in communism and the "esthetization of politics" in fascism, technological inventions and their new esthetic possibilities define the political ideologies of certain time.

The transformation that made possible communism and fascism was the mechanical reproduction of the work of art that destroyed the unity and the authenticity, the aura of the traditional art but also the type of subject that contemplates such art. Film and photography present a new type of control and political systems closely connected to a new type of collective subjectivity - the mass audience in the cinema.

In this respect, the terrorist effort to destroy the new technological apparatuses and the contemporary form of subjectivity defined by them goes hand in hand with their political mission to restore old, ritualized "auratic" form of society. This political iconoclasm inspired by certain esthetics is a type of destruction that does not introduce innovation but tries to restore old traditions. Terrorist video art showing the destruction of our media, and other technological means that define our civilization, is not a simple terror. It is rather an example of estheticized terrorism like fascism, while the immediate pathetic reaction of the "civilized world" in many cases resembles a "politicized art" (patriotic and sentimental poems, collages etc.).

3. The new cave and its Plato

This new iconoclastic strategy of images showing the destruction of images does prove to be very efficient with respect to its consequence on our media and on the subjectivity they represent. We do not need to see action movies anymore to experience real collapse of skyscrapers or the destruction of world wonders when they happen in real time. We do not need a complicated talk show to experience direct and trivial confessions etc. The iconoclasm of the terrorist video recording transforms all our objects of imagination into trivial forms that point to the futility of their representation.

Usama bin Ladin as the new Plato from his cave tries to resolve once again the problem of simulation and reality, truth and shadows, tradition and destruction, this time with the use of video. Unfortunately, similar battles against the shadows on the wall of the cave always end up with a new ideal city of demented guardians and charismatic philosopher-kings that terrorize the rest of the world as the Taliban did in Afghanistan. The famous December 2001 UBL's video even shows a setting similar to Plato's dialogues. It starts as chatter among friends presenting their stories and stories of other friends. They laugh together, flatter each other, and in the end they just comment on how many new followers they have succeeded in recruiting. The terrorist indulgence in video is clearly stated in the beginning, when bin Ladin's friend, titled Sheik, describes his recent visit to Saudi Arabia, where another Sheik Al-Bahrani gave some incredible speech. This speech was recorded on a video but he was not able to bring it with him since he was trying to escape.

Similar regressive moves to the speeches of other people that are not present and that are quoted in length also characterize Plato's dialogues. In contrast to these witty and rhetorically perfect speeches, Usama's dialogues resemble the boring and ritualized passages from St. Paul that include the ever-present word "brothers". The speech is reduced to a very ritualized and constantly recurrent phrases "Allah be praised", "Allah is great",

"Praise Allah." These expressions are common in the Arabic language but in bin Ladin's "Video-Symposium" everything repeats itself: expressions about martyrs, dreams and visions, quotes from the Koran, identical descriptions of the happiness in front of the TV in the day of the attack etc. The morbid reiteration is also typical for his terror attacks on the two embassies in Africa, Twin Towers, Pentagon and another site all in one day. This also brings back the issue of the relation between esthetic and terrorism since this emphasis on repetition could be ironically derived from Islamic abstract art.

The description of celebrations in front of the TV after the attack is another example of the ambiguity surrounding terrorist iconoclasm. The celebrations after the attacks are compared to a victory celebration after a football match, revealing the very secular character of the jihad. We even hear about a dream of some follower of UBL in which an Arab football team of pilots beats the West. These metaphors and dreams that are inspired by the media and the West and do not follow the religious rhetoric reveal the genuine banality of this evil. The terrorist attack against the West actually mimics the excitement from the world cup in football.

The whole video from December 2001 ends up with a completely bizarre comparative analysis of prophetic dreams related to the 11.September attack. Usama bin Ladin at one point even admits that he was worried that the dreams of people around him could disclose his plans. In that moment it seems that the iconoclasm as any political terror bows to these inner images and dreams that it can not regulate and that disclose more than they should. It also reveals that the absolute goal of every dictator and tyrant is to control what people are dreaming, their "inner" life that otherwise presents their principle freedom.

4. Media Iconoclasm in the Art after the 11. Sept.

The immediate response of the art community to the September events and the war in Afghanistan does not offer any interesting material for analysis except in terms of "politicized art". Only later works indicate a certain common topic and strategy that tackle the issue of iconoclasm and the relation between esthetics and politics, or art and terrorism, and the problem of representation and power.

Many of these later works have the form of a "pixelized" criticism of the omnipresent media images that captured, haunted but also desensitized the public after the attacks. Other works are part of certain "anatomy of sorrow" that started with the inflation of pathetic and kitsch collages on the Internet after the 11.September. This stage was slowly overcome by more abstract, and minimalist collages that developed into performative gestures. These performative experiments show that the new media art is no longer only a simple web-site or even application, but offers also interesting self-reflection on the forms of representation on the web. Special group of post-September art works shows and criticizes the iconoclasm present in our relation to the war with Afghanistan. Very few images from this war appeared on the Western TV and it seems that we deprived the people of Afghanistan of the right to show their images. For that reason some artists like Mihaly Csikszentmihalyi proposed a remote-controlled robot reporter, the "Afghan eXplorer" http://compcult.media.mit.edu/afghan_x/ that will broadcast news for us since US has disallowed field journalists in war zones. Other artists like John Klima have built a digital relief map of Afghanistan resembling a standard computer 3-D "shooter" game. This "Great Game" at http://www.cityarts.com/greatgame simulates what is happening in Afghanistan with the use of information from the Defense Department briefings. The real war is reduced to a simulated computer game that we do not actually play but only watch. This exaggerates how limited the amount is of information that flows from that region. We can not properly visualize what is happening there, so our understanding is reduced to an experience with a simplified game.

All three categories of art (pixelized and media criticism, digital collages and performative experiments) as a response to the terrorist attacks and the war are interesting in respect to how they treat the iconoclast issue. The "pixelized criticism" of the media representations uses the familiar images from the TV and alters them in order to deconstruct their iconic function. In the case of Eryk Salvaggio`s online work "September 11th, 2001" http://www.anatomyofhope.net/wtc/2/ the goal is to show that the slaughtered people are not only "images, tape loops, and abstract symbols" but real people with names and families. Salvaggio uses the letters from their names as "pixels", elements of the famous picture of the airplane hitting the WTC. This picture is no longer only a representation of the destruction of the WTC but more like a poem that connects the victims with these buildings in a very direct and shocking way. It forces us to think behind the media representations and acknowledge that no picture can convey the immense tragedy of these people. Another strategy of this iconoclast fight against the media images to which we tend to reduce our experience of the attack, is the online project of Antonio Mendoza which uses the format of the web pages as lenses that magnify but also distort the media images http://www.subculture.com/crash1.html. In this "web movie" we experience no longer the horror of these pictures but the horror of loosing our power and control over their representation and the media. Photographs are reduced to pixels that remind us of some old computer game, the mouse as a navigation tool serves more as a target position indicator or other violent tool, and the windows shake, open and close without our will. Very similar experience of loosing control over the images as a type of iconoclast reaction introduces the web project of Renald Drouhin "Take action" http://ici.cicv.fr/. The poor quality of the web-cam stills on this website causes fear and a feeling of danger even when they present completely neutral sites. After the attack on the WTC we experience all these pictures as sites of potential catastrophe and not as a public space.

While the "pixelized" criticism mainly targets the media presentation of the conflict, the collages as a typical technique connected to 11.September developed into abstract and even performative art on the web as another aspect of iconoclasm. While the common collages expressed their tribute through patriotic and often pathetic use of pictures and symbols, these abstract collages express their solidarity by projecting the famous twin buildings into unexpected shapes and objects. This abstract tribute for example interprets the date 11. as a symbol of the two buildings - the website of Mellissa Gould on

http://www.megophone.com/wtc.html or on a French website http://rebusparis.com/elevenseptember/. There are also many attempts to express the geometrical and architectonic perfection of these buildings as a tribute and opposition to the prevalent kitsch pictures. Good example is the collage "Skyscaper" by Tii Johannson http://www.a-virtual-memorial.org/memorials/terror/artists/tiia_johannson.htm or an art work from Pakistan by Asifa R. Naqvi "Art, Architecture, Space" http://www.asifrnaqvi.com/. His flash animation shows different architectonic views of the buildings that objectify them and bring back their "rational" origin against the irrationality of the destruction and mourning. This project has an interesting subtitle "Interactive dictionary of NYCWTC 911" that is trying to remind us that we should think about the WTC buildings in terms of incredible work of architecture and civilization and not only as an object of barbaric destruction. Against the language of terror and destruction presented by the media images we should always pose this language of constructing and architecture. Similar message is conveyed also in the posters by Guillermo Kuitca http://www.timetoconsider.org/submissions3.html that were part of the "Time to Consider" poster campaign.

The most interesting iconoclast response of the art after the events of 11.September are the performative attempts in which the computer is used not as a medium but as an object per se. The tribute is paid not with a help of a picture or even a word or other system of presentation but by certain actions we perform when we use the mouse, computer screen and other basic tools as part of our life with a computer. The destruction and the missing buildings are expressed here by certain actions that problematize our habits of using the mouse and manipulating objects on the screen. For example the windows do not serve to organize and even represent items but are used as geometrical shapes that resemble the shape of the twin towers. This type of tribute is not a collage and not even a web site but and action that has a meaning. Good example of such performative art work on a computer is a piece done by an artist named jimpunk who changed his Macintosh screen with two empty windows in the shape of the buildings and made a screen shot of this. http://www.whyproject.org/images/jimpunk_remember.gif

Similar tribute is much more personal than a collage done in PhotoShop, because it involves the whole computer of a concrete person that performs certain actions on its very intimate level, the screen that for a moment serves only as a tribute. Another project by the same artist shows a similar iconoclast performance http://www.jimpunk.com/NYC/wtc/. After we click on the button, two empty windows pop up and then disappear and a message "remember" appears in the background screen. Here the whole tribute is expressed through an action of the empty pop up windows. Similar to this is also the website "Hole in the sky, Hole in my heart" on http://www.mixedmediaonline.com/091101.html where we see blank picture boxes with the typical sign of a missing picture on the web that usually indicates a mistake. This mistake actually represents the missing buildings and it is the most radical example of computer screen and windows iconoclasm that expresses messages not by representation but by certain actions - performances.

Conclusion

Essential about UBL's videos is that they are ultimately boring but we are trying to find in them some deeper meaning and secret signs of the Evil. From the philosophical point of view all of his iconoclast attacks on the Western world only repeats the close relation between media and destruction, the hidden agenda behind every quest for absolute truth, presence and authenticity. Every medium has this iconoclast longing to disappear and reveal the pure reality that is translated into projects such as "objective news", "reality TV", "live cinema", different types of "arche-writing" etc. But there is also a "positive" iconoclasm that is represented by the artistic response to the 11.September. This iconoclasm does not intend to destroy but uses the iconoclastic mechanisms in order to gain independence and experiment with new forms of expression.

From the political point of view, UBL`s videos reveal only the close connection between terror and banality similar to one described by Hannah Arendt after seeing the Eichmann trial. It is not only the banality of every terror that unambiguously shows what it states, but even more the terror of banality, of trivial and ritualized speeches, formulas and acts that reduce individuals to agents of a system that serves only its own goals, which are historical and not related to individual lifetime. Any ideology is just like a misused machine that does not serve the ends of people but uses people as a means.

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Expanding the Boundaries:
Designing New Media Interdisciplinary Curriculum

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Abstract

The future of New Media depends on the breaking down the walls we find within the higher education. As we attempt to define a New Media major for the 21st century we find we are often hampered by our own 20th century mindsets of curriculum. This paper covers the curricular issues that are common in implementing new media today in higher education.

New media by its very nature is cross-disciplinary

New media students will need to draw upon (pun intended) a variety of skills in their careers. Many of these skills are to be found in other departments than art. For it will be the multitalented that have the clear advantage in our increasingly changing world. As a result, students today will be less likely to pursue a major in pure visual arts or film but are more apt to study a mixture of disciplines. They must understand not just the basics of drawing and design but know something about sound, video editing, text, lighting, interactive design, computer logic structures etc.

While this interdisciplinary approach has been far more common at the graduate level, it now increasingly appears at the undergraduate level for new media. However this can be a double edge sword for the student risks pursuing too many directions and degree becoming just a general survey. In New Media this can all too often result in advanced technical abilities but without art's basic competencies. In trying to find that balance we have to ask: What are the basic competencies for New Media?

Universities have on the whole a variety of interdisciplinary options available; the departments themselves lack a flexibility that exists in private art. Thus, many universities allow individual, highly motivated students to construct their own course of study. However this has generally been limited to only for those students who could justify, or harass advisors into acquiescing, that any single department wasn't meeting their educational needs. In addition, these schools are now discovering that they must mandate a "capstone" experience for these students to link their coursework in one comprehensive project.

The design challenges for New Media Interdisciplinary curriculum?

New Media applications and career tracks
Basic competencies for new media
Boundaries (Speed Bumps and Pot Holes)
Interdisciplinary - courses versus curriculum

Initially, in looking at New Media, we assume that our students will need to know everything we have mastered. Because if worked for us, then it logically follows that it should work for them, and then on top that, the students should add the mastery of the new digital applications. OK, lets see, that should only take them 4… 5… 6…years…. Oops Houston we have a problem…

Secondly, we have to realize that our student's brains are wired differently than ours. Their exposure to computers while growing up has changed them. They not only are use to rapid change, they can adapt faster then we can. Our students today have grown up with the first generation of computers in their home. They do not remember a time when video games were not part of their lives; email, chat rooms, and the web have been as much a part of their lives growing up as TV was in ours. The immediacy of real-time interaction via the Internet is not new to this generation. Next let's look at the set of skills they will need and match courses later (Of course in our day to day advising this would never happen).

The Skills of the New Media Artist

1. Above all the new media artist must be a *story teller*, with a working knowledge of how all the different artistic, sound, theatrical, and cinematic elements come together to make a film.

2. The new media artist must be a good *visual artist* with the ability to draw the figure well, and knowledge of structurally strong draftsmanship and perspective. To visualize ideas rather than strictly create representations.

3. The new media artist must learn many of the skills of the *cinematographer.* The sense of composition and staging that is the stock-in-trade of the live-action cameraman must become second nature to the animator.

4. The new media artist must have a knowledge of *acting*, not only of human characters, but that of animals, of objects in motion, and water, smoke, fire etc; all of this must be executed with a sense of timing that conveys not only convincing human acting but a feeling of weight, momentum, and inertia.

5. The new media arts must have a working knowledge of *sound editing* (music, dialogue, and sound effects). The animator should understand the suitability of music, the use of dialogue, the relative levels of the different music, dialogue, and effects tracks, and the synchronization of these tracks into one.

6. The new media artist must acquire a knowledge of *set designer* - to create space and use light and color to embody the mood of each scene.

7. The new media artist must be a *film editor*, with the ability to make decisions regarding the rhythm of the cutting, continuity etc.

8. The new media artist today must understand *computer logic* with the ability to integrate traditional skills with new computer applications. Without prerequisite knowledge of programming language structures, art students are stumped by concepts as fundamental as variables. With scripting integrating into more demanding visual applications teachers can provide script examples but few students will understand how to manipulate the language to solve unique problems.

Currently, students must select a major and hope to take courses in other areas. With the varied set of skills needed, students today will be less likely to pursue just one major in the visual arts, and are more apt to study a combination of disciplines. No single discipline can address all the different needs of new media.

Interdisciplinary options

Remember within academia we are dealing with a variety of solutions that are cobbled together to integrate new media into the curriculum.

Pre-existing interdisciplinary program structures.
New programs
Experimental courses.
Double-Majors

One of the most common solutions in new media is to direct students to one of the pre-existing interdisciplinary university curriculum. Interdisciplinary learning is not new: New interdisciplinary fields have expanded across all subject areas – this has been most evident in the sciences. In fact across campus the number of interdisciplinary programs for undergraduates have doubled in the last decade.
Currently many professors find themselves approving an interdisciplinary approach crafted by these students. This plotting your own course of study requires tremendous energy and self-discipline from the student – from the start of the application process until the delivery of the final project capstone

One of the obstacles that prevent the development of an integrated interactive multimedia design curriculum is that it does not fit nicely into any currently defined field. Universities and schools have begun to develop that attempt to merge the various interests. We see academic programs such as Computer Art, Computer Science, Information Technology, and Communication forming an umbrella structure and offering classes in interactive multimedia, each with its own unique approach to the subject.

Here we can find we have more in common with faculty in other departments (i.e. music, computer science, theater etc) then in our own. However the perils of this is that its puts tenure in the home department at risk.

Boundaries - Speed Bumps and Pot Holes of Academia

Colleagues come not only in all shapes and sizes, but also come in all pedagogues and ideologies.

1. The Ancients versus the News. Ancients believe that the curriculum that "they" created 10 years ago is now etched in stone and to consider changes is a personal affront. We are dumbfounded by their attitude because we forget that from their point of view there is nothing in it for them, only a gradual diminishing of their stature, if not their livelihood. They have no reason to support change and with faculty governance now an institution unto itself it does not bode well. It is in their interest to stop you, and if they can't do that, then to slow you down. The realization that new media has and is changing the way we, as a culture, exchange information is not comprehended by an elitist, head in the sand, luddites attitude.

2. New traditionalist - Older colleagues may have evolved over time from the creators of the new, of forging new visual solutions 20 years ago, to now protecting these art traditions they helped establish. Their motivation may be grounded in allegiance to a specific "physical medium" or a purist point of view of confusing technique as content. While this "physical traditionalist" may not help the cause we can't overlook the fact that physical mediums can serve new media as a tremendous learning tool. Too often "computer students" don't think things through. The physical medium slows the learner down to fully consider the outcomes as opposed to selecting from variations.

3. Old wine in New bottles syndrome. New media is only wonderful as a tool to assist in the creation of "real art"; it is not a medium, it is a tool. Colleagues seek efficiency for their traditional art. Not unlike the role of photography in the early part of the 20th century. I personally find these people can be helpful initially but then can turn around and be just as detrimental as they wrap themselves in the garb of new media but invariably thwart its growth by siphoning off funds and correcting your "misconceptions" of what is new media.

4. Applied Art versus Fine Art. Is "Applied" a dirty word? To restrict your thinking in terms of "Fine Art" can become a trap for which other alternatives are never considered. There is generally a prejudice that applied imagery "inferior". Applied faculty are frequently treated as if they are a necessary evil to be tolerated or banished to the community colleges. Its unfortunate because all to often a "too" fine art an orientation emphasizes learning to find one's own voice at the expense of learning to visually communicate with others. The concept of user/audience can be lacking. This difference can be fundamental to the success of the new media student.

5. Pre-requisites Interdisciplinary curriculums can be effectively stopped by strict pre-requisites that may be appropriate for the single discipline student. This is continually vexing to me; how can students effectively jump these hurtles without becoming entangled in the system.

As we all attempt to sit down and define an undergraduate major in new media for this new century we must not lose site that we all have to hack it together through political tradeoffs and compromise.

Conclusion

Nicholas Negroponte believes, that "… we are moving away from a hard-line mode of teaching, which has catered primarily to the compulsive serialist, toward one that is more porous and draws no clear line between art and science or right brain and left".

A cross-disciplinary approach enables students to explore new ideas. As functionality takes precedence over appearance students must have a foundation in visual communication but must understand numerous other areas as the boundary between content creator and software programmer is blurred. The only way to communicate with the other side is to know some of their world.

Plotting your own course of study in new media requires tremendous energy and self-discipline. In New Media we may find computer animators, visual effects artists, game developers, web navigation artists etc. who find interdisciplinary study offers them their only hope getting the curriculum they need.

You never know which schools will emerge in the future with best curriculums in New Media, it may have more to do with luck, politics, dedication, outside money or even the potential of new media itself to go over the heads of academia and reach directly to the student. In the not too distant future the individualized major of today may be tomorrow's newest interdisciplinary department.

Artist Explorations of the Boundary between the Virtual and the Physical

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Abstract

This text surveys artistic exploration of the boundary between the physical and virtual electronic worlds and considers developments in the research world likely to be significant.

The last two decades have marked the ascendance of the virtual. Artists have rushed to create computer-mediated worlds. As our public and private lives are dominated by electronics, theorists suggest the physical world decreases in importance. For example, in **Being Digital**, Nicholas Negroponte suggests the focus has shifted from moving atoms to moving bits. Radical constructivists suggest our concepts of physical reality are so shaped by underlying narratives that we can't have access to an authentic "reality".

In recent years, however, some technological artists have begun to question these developments. They have become interested in the intersection of the physical and the virtual worlds, which some call "mixed-reality". For example, they have created events in which physical events shape what happens in the computer generated world. This paper briefly surveys this mixed reality art and identifies trends and underlying themes. It also identifies scientific and technological research that suggests the growing importance of this inter-penetration.. The paper is based on research from my book **Information Arts: Intersections of Art, Science, and Technology**. This paper can only offer a few examples of an enormous body of art works; please consult my web site for full categorized links to world wide artistic experimentation.

Note that the distinction between the physical and the virtual is not as clear cut as it might seem. Usually the virtual refers to electronically created worlds - images and sounds generated on screens and speakers through analog and digital synthesis and manipulation. The physical refers to the 3-d palpable world of bodies and things that take up space and can be touched. Yet, even the virtual world is created in the physical space of the phosphors of the screen and speaker cones and the movements of mice and keyboards are necessary for its creation. Also, the virtual existed long before digital technology - literature, art, drama, and cinema created artificial worlds that drew in audiences.

This text surveys art that explores several different categories of mutual influence: the electronic world's influence on both human and non-human physical realities and the converse.

I. Non-human physical world's influence on digital events: Several artists have created digital events based on sensing of the natural environment. For example, Project Taos's *Sensorium* presents a throbbing earth based on current worldwide seismic activity; Patrick Clancy's *Writing Machine* progressed based on sensing weather elements; my *Ocean Merge* presented a 3-D sound event based on the movements of the waves. Natalie Jerimjenko's *One Tree* project linked environmental sensor readings about air quality with the growth fate of digitally created trees which live in an artificial life environment. Shawn Brixey's work focuses on atomic level phenomenon - for example, *Instruments of Material Poetry* in which motion of subatomic particles are converted to sound events.

Monumental forces such as the weather and seismic activity confront the claim that the physical world is insignificant. Artists who create these events have many agendas, including acknowledging the power of the physical world, questioning the conventions used to represent these natural forces, asserting dominance over these forces by bringing them within the artist's control and using the non-linear flux of the events to orchestrate other events.

II Human physical actions influence on digital worlds: In this popular area of investigation, artists seek to find ways to link human actions (beyond mousing or keyboarding) with digital events . Examples include haptic and kinesthetic works that read motion in 3-d space, gestures, touch, and gaze. Some read more complex behaviors such as bicycling or surfing. And others read complex sociological aggregates of action such as movement of transit trains or traffic. Some such as VR oriented works require complex instrumentation while others try to interpret motion in free space, typically via video analysis.

Some examples of motion based events include: David Rokeby's *Very Nervous System,* which translated viewer motion into an electronic instrument; Monika Fleischmann's *Rigid Waves*, which linked image distortion to the closeness of the viewer's approach;; and George Legrady's *Tracings*, which revealed levels of imagery based on the way visitors positioned themselves.

Some examples of gesture, touch, and face reading works include: Pamela Z's conceptual sound works, which use her body as a midi instrument; Christa Sommerer & Laurent Mignonneau's *Intro-Act*, which use visitor actions to influence the evolution of artificial life forms living in their system; Thecla Schiphorst's *BodyMap,* in which the touch of the visitor controls video events; Seiko Mikami's *Molecular Clinic,* in which the gaze of the viewer affected the development of digitally projected artificial molecules; and the Plasm group's *Your Mug*, which attempted to link events to facial expression recognition.

Some examples of linking complex motion to digital events include: Jeffrey Shaw's *Legible City*, which let visitors ride a stationary bicycle to navigate an artificial city made of architectural sized letters; and my *TransitTime*, which linked digital sound and video to the real time movements of San Francisco transit trains.

What intrigues artists about these links between human actions and digital events? For some the physical world of motion and gesture allows for more complex investigation of the psychology of interactivity - for example translating physical qualities of near and far into psychological metaphors, or reading the quality of touch as an indicator of attitudes. For other artists breaking out of the standard interface can liberate the digital environment from its commercial and historical baggage.

The "promise" of these new physical interfaces is somewhat historically bound. The mouse itself was once considered revolutionary in the way it freed the user to use more expressive physical gestures than the keyboard. It is possible that as research into the new physical interfaces matures, they too may become conventional and their artistic interest will decrease.

III Activated Objects: Artists have created new kinds of activated objects in which physical manipulation results in changes in the electronic events. Often these installations explore several layers of interconnected physical and digital worlds.. Examples include Toshio Iwai's *Music Plays Images*,, in which a pianist's movements on the keys generated light which generated music when it bounced into another piano; Masaki Fujihata's *Global Interiors* and *Beyond Pages*, in which viewer manipulations of pages of a book causes physical (eg a light to go on) and virtual events (sounds, digital video of action behind a door); Perry Hoberman's *Timetable* and *System's Maintenance*, in which three inter-linked worlds (full size physical room, miniature physical room, and projected room) are affected by actions in the other versions of the room; and David Small & Tom White's *Steams of Consciousness*, in which letters projected on a pool of water are affected by viewer's moving their fingers through the water;

Artists are addressing several themes in this work: the surprise and violation of expectations that arises when conventionally inert objects are endowed with the hidden powers; the new possibilities of activated physical worlds; and play with constructivist questioning of the validity of assuming the objective nature of the physical reality. Outside the art world, researchers in fields of ubiquitous computing and tangible bits are working to expand the IT properties of objects.

IV Virtual world impact on the physical world: Artists are exploring arrangements where the influence goes the other way - the virtual world influencing the physical world. Control automation, telepresence, and robotics offer common examples in which electronic virtual worlds control machines acting in the physical world. Examples of artistic exploration of these concepts include Ken Goldberg's works such as the *Telegarden*, which web visitors could influence the movements of a garden-tending robotic arm; Rafael Lozano-Hemmer's works such as *Vectorial Elevation*, in which web visitors controlled the positioning of search lights over Mexico City; Survival Research Labs' *Lethal Experimentation*, in which web visitors could chose to launch potentially dangerous projectiles; and other artists visualizing the state of the network in concrete form.

Rapid prototyping (RP) offers another form of physical/virtual linkages. Computer designs in the electronic context are directly translated to instructions to machines which create corresponding physical objects for example by focusing laser beams on plastic vapor so that it solidifies to form the object. Artists are beginning to explore this capability. For example, the Cyberarts "Mind into Matter" show invited sculptors to send in designs which were then actualized into physical forms by a rapid prototyping machine.

Most tools and machines can be seen as aids in moving from the virtual to physical form. Sculpture and architecture are contexts for actualizing imagination in the physical world. New electronic and materials science developments can be seen as primarily shortening and easing the cycle.

V. Virtual world impact on human bodies: Artists are exploring the possibilities of the virtual world directly affecting human bodies. For example, in Stelarc's *Parasite*, distant viewers clicking on an abstract representation of the body are able to activate muscle stimulators.. In *Movotar* an artificial life controls the stimulators. In Arthur Elsenaar and Remko Scha's *Huge Harry*, an artificially intelligent entity gives a lecture illustrating human emotional response by controlling muscle stimulators placed on Scha's face. Stahl Stenslie and Kirk Woolford investigate the body/ electronic boundary in works such as *cyberSM* , in which viewers use stimsuits, containing both touch sensors and kinetic body vibrators, to send body sensations back and forth.

Artists are drawn by the twin poles of fascination and abhorrence. Do we really want to let the virtual world directly impact on our physical bodies? Do we have any choice?

VI Summary: We are at a stage of uncertainty about the physical world. The information economy, electronic media, and constructivist skepticism about physical reality reduce the importance of the physical.. These trends connect with the longing for escape from the limitations of flesh and matter which has been a long historical theme.

Subjugation of the physical and biological world is another active theme manifest in research. For example, ubiquitous computing hopes to activate and monitor everyday objects and architecture. Bionics and telemedicine hope to similarly interconnect the biological body with electronic infrastructure. Even more radically, bioengineering, bioinfomatics, and nanotechnology seek to understand and ultimately control the heart of physical reality. The distance between the virtual world of electronic representation and physical manifestation will be erased as researchers translate designs to actual cells and materials.

For some, these scenarios are nightmarish distortions to be resisted. For others they are part of the inevitable movement of history. Artists seek to interrogate this space by putting the physical and the virtual in contact with each other. What is special about the physical and biological world? What are the limits and opportunities of allowing the electronic and physical worlds to influence each other? The arts are an ideal place for this inquiry because of their simultaneous interest in the physical and the iconic. In a radical shift the everyday world of bodies and things will become the media of art.

Muybridge, Motion and the Still Image

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James Faure Walker *Forms in Motion: Fugue* 19" x 32" giclee iris print

Abstract

The exhibition 'Silent Motion' juxtaposed photo sequences taken in the 1880s by Muybridge, the pioneer of early cinema, with works by contemporary digital artists. These works ranged from web surveys to murals, demonstrating the enhanced methods now widely available for studying motion, and for presenting the complex ebb and flow of city life. This paper reflects on the enduring fascination of the still image – whether the format be painting, photography, or digital media.

I am one of those digital artists who take their camera with them to city centres looking for some sort of pattern in the random journeys of pedestrians. This paper explores parallels between Muybridge`s experimental photography of the 1880`s and some visual structures developed by artists who study the movement of pedestrians, traffic, or populations. Muybridge`s freeze-frame photography can now be instantly created with a digital camera. A few seconds of any scene of people walking in the street, with traffic passing by, can be transformed into 24 still shots. Muybridge`s photographs were not intended to be works of art in their own right, but scientific studies. However, they contain fascinating details – shoes, sunglasses, an unexpected pigeon. Digital artists have been fascinated by the early years of cinema because of parallels with the rapid growth of digital tools. We can gather and process huge amounts of data with little effort. The creative part is working out how to shape this into something with a real point.

I curated the exhibition 'Silent Motion' for the Kingston University's Stanley Picker Gallery, subsequently at the Colville Place Gallery, London, last year [1]. The major Muybridge

archives are in Kingston (where he was born, spent much of his life, and died in 1904), and contain some surprises – several photo-sequences have the look of conceptual art of the 1970`s. The idea of exhibiting these images alongside digital works – from web sites to a 'printed' installation - was to set up a dialogue between past and present: how can 'raw data' function in an art piece? What are the ethical and the aesthetic issues? What is the role of the still image in describing motion? The exhibition led to a searching debate at a conference, with contributions from exhibitors: Rejane Spitz (Brazil), Annette Weintraub (USA), Hans Dehlinger (Germany), Lane Hall and Lisa Moline (USA), Andrew Carnie (UK), Victor Acevedo (USA), Anne Baker (UK).

Bearing in mind ISEA Nagoya's theme of 'Orai', my paper will present images of the movement of pedestrians and traffic in a busy city. This is a subject I have puzzled over for the past seven years in my own work, and one reason I was drawn to Muybridge in the first place. Muybridge lectured to audiences of artists – mostly academic and conservative artists - and showed them what the naked eye could never see – the bird frozen in flight. Muybridge revealed a new world, the split second snapshot, that eventually became incorporated into the painter's language (from Duchamp to Bacon); today's digital cameras enable the painter to wander around a city absorbing data at a rate undreamed of by previous generations.

Should this visual material be condensed into a 'still' image? How far can the habits and methods of the painter be usefully transposed into a digital format? Some speakers at earlier ISEA symposia spoke with buoyant confidence, picturing a new media that would soon take over from the traditional physical and non-interactive arts. The pioneering days of cinema had their false dawns too, with entertainment eventually hijacking what had begun as scientific experiment. Today it could be that traditional art forms will re-emerge having absorbed the new technology and the expanded horizons. What we can be sure if is that the technology won't make that creative leap all by itself [2].

1. www.kingston.ac.uk/picker/silentmotion. The catalogue is available from DELUXE-ARTS Gallery and Creative Space, 2-4 Hoxton Square, London N1 6NU, UK, tel: 44 20 7729 8503, www.deluxe-arts.org.uk email: keith@deluxe-arts.org.uk

2. I am currently writing a book on painting and the digital studio, as part of my AHRB Fellowship. Digital and physical paintings plus attached essay can be found at the Digital Art Museum site at http://www.mkvv.com/DAM/faure-walker/index.htm or www.dam.org.

Mysterious Booths, Blowing in the Winds – Collaborative Learning

Lehan RAMSAY

(no paper available)

Panels

Intermedia Art in the Digital Age

Ina BLOM, Paul HERTZ (co-chair), Jack OX (co-chair), Andrea POLLI, Owen SMITH
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Abstract

This panel will examine the historical concept of intermedia, compositional methods and processes for creating intermedia, issues of sense perception and sensory coupling in the reception of intermedia, and the implications of digital multimedia, real time performance and interaction for the future development of intermedia.

Intermedia is a term used by the Fluxus artist Dick Higgins to refer to works of art where the compositional process works across the boundaries between media or even fuses media. Although Intermedia can be multimedia it certainly does not have to be. Intermedia often implies structures that are shared by or translated from one medium to another: in this respect it is a more specifically defined term than multimedia. While it is sometimes called synesthetic art, intermedia does not seek to imitate the physiological phenomenon of synesthesia, though it may approach it metaphorically. Intermedia simply extends the creation of form across media and sensory modalities without necessarily promoting a tight coupling of symbolic values, multisensory events, or compositional structures.

With the advent of digital multimedia and real time interaction and performance with computers, intermedia can now achieve a precision and synchronicity of events that were not possible until the last two decades. Moreover, digital media enable compositional structures to operate at all levels of granularity and with a degree of abstraction that places all media on the same plane. One could argue that digital intermedia is the high-level process that corresponds to the low-level truism: all media is data, a single substance. Intermedia art explores that substance with all available senses.

Author Biographies

Ina BLOM (Ph.D) is a writer, critic and art historian based in Oslo, Norway. From 1994-99 she was a Research Fellow at the Institute of Art History, University of Oslo, where she submitted her doctoral dissertation The Cut Through Time, A Version of The Dada/Neo-Dada repetition (1999). She is now senior curator at the Museum of Contemporary Art in Oslo. A former radio DJ and music critic, she is an editor of the art journal NU and the cultural journal Samtiden, and a regular contributor to Frieze and Flash Art.

Paul HERTZ teaches in the Department of Radio, Television and Film and develops interactive multimedia applications for the Collaboratory Project at Northwestern University, USA. His work with intermedia art began thrity years ago, in Spain, without computers. As a Visiting Artist in the Center for Art and Technology he helped to develop Northwestern's first program in virtual reality art. Currently he is working on a VR-based intermedia performance, funded by a grant from the Center for Interdisciplinary Research in the Arts at Northwestern University.

Jack OX has been working on the visualization of music for over 20 years, including research in musicology and phonetics. Ox's internationally exhibited work includes an 800 square foot visualization of Kurt Schwitters Ursonate and a cycle of 12 paintings based on Anton Bruckner s Eighth Symphony. Long a member of the editorial board of Leonardo, Ox was guest editor, with Jacques Mandelbroijt, of the special section "Synesthesia and Intersense." Her collaborative project, the 21st Century Virtual Reality Color Organ has received extensive support. Ox was a visiting fellow in Computer Science at Loughborough University, UK, in 2000.

Andrea POLLI is a digital media artist living in New York City.° She received a Master of Fine Arts in Time Arts from the School of the Art Institute of Chicago and is currently an Associate Professor of Film and Media at Hunter College.° She has exhibited and lectured nationally and internationally. In 2001, Polli presented her performance work, Intuitive Ocusonics, a system for performing using eye movements, at V2 in Rotterdam, Holland; at SIGGRAPH '01 in Los Angeles, CA; at the Subtle Technologies Conference at the University of Toronto, Canada; and at Immedia, at the University of Michigan.

Owen F. SMITH is an historian of alternative art forms, a producer of multiples, digital artist, and performance artist. His scholarly work has been published in numerous books and catalogs on Fluxus, Intermedia and related forms of creativity. In 1998 his historical survey of the Fluxus Movement, Fluxus, The History of an Attitude, was published by San Diego State University Press. His work as an artist has been exhibited throughout the US and in Europe and Japan. His work was recently seen in Experimenta New Media Arts Festival, Australia, The Newbury Arts Centre, Cork, UK and the Boston CyberArts Festival.

Form, Substance, Correspondence: Intersensory Composition in the Digital Age

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Abstract

Intermedia dissolves artificial boundaries between media, either through a poetics that operates on symbols or through extending formal compositional techniques. While not all intermedia art crosses sensory modalities, cross-modal form is a time-honored attempt to make sense of a world which we experience in all our senses. Correspondences among the senses frequently bear symbolic or visionary meanings. Computational technology enables new forms and disciplines for intermedia composition. The historically developed poetics of intermedia provide a context where the potential meanings and cosmological viewpoints of formal experiments can emerge. Digital technology vastly expands our ability to (re)create cross-modal experiences. This paper will examine some of the possibilities suggested by new technologies and old visions.

1. Theme

...la matiere est l inconscient du forme (...matter is the unconscious of form) — Gaston Bachelard, L eau et les R ves

Digital media offer us new possibilities for creating multisensory art. With the computer we can compose and perform multisensory events with a degree of precision beyond the threshold of human perception. This capacity is not just of interest to artists: immersive interfaces and multisensory representations of data have become an important tool for scientific research. In their separate ways, both scientists and artists attempt to make sense of the world. Arguably, their methods if not their styles converge in the propagation of digitally-mediated multisensory experiences.

We contend that a specific area of these experiences, which we shall call digital intermedia composition, or simply intermedia, can prove particularly fruitful. As employed by Fluxus artist and theorist Dick Higgins[1], intermedia designates a compositional process that works across the boundaries between media or even fuses media. It extends the creation of form across media or sensory modalities without necessarily promoting a tight coupling of events. At the same time, intermedia implies something more specific than multisensory opera. It is not so much a total art work as a hybrid art work.

We can distinguish intermedia from multimedia and from so-called synesthetic art. Unlike multimedia, intermedia does not necessarily juxtapose different media; rather, it maps the compositional techniques of one medium onto another. Like synesthetic art, intermedia composition often maps events or qualities of one medium onto another through a system of correspondences, but it does not seek to imitate the physiological phenomenon of synesthesia or necessarily to stimulate more than one sense

Intermedia may be approached intuitively, as a kind of poetic trope, or structurally, as a compositional technique. Gaston Bachelard, discussing onomatopoeia, asserts that the word *clignoter*, to wink, contains within its sequence of sounds the sense of a wink, an action which is silent.[2] He suggests that the mind extracts structures from language that are not necessarily sound or image but that mediate between the two. Whether one approaches these structures through intuition or through formal analysis, the human capacity for generating and perceiving them lies at the heart of intermedia.

Historically, sensory correspondences of the sort employed in intermedia and synesthetic art constitute a source of symbolic meaning. In his poetry and critical essays Charles Baudelaire frequently evokes a system of correspondences where scents, colors and sounds correspond [3] in a universal keyboard of sensations. He presents the experience of correspondences as a moment of illumination, when a new order of reality manifests itself simultaneously in the interior and the exterior world. Correspondences appear in a more hermetic form in the poetry of Arthur Rimbaud, who also equates cross-modal sense perception with psychic illumination. In a famous letter[4], he declares that the poet must become a visionary and that he can do so by means of the calculated disruption of the senses. He views Baudelaire as the first such visionary, but also accuses him of being too much the artist, working old forms when new ideas demanded new forms.

But precisely because form governs art, we should be wary of placing too much weight on the visionary experience. As an aesthetic strategy, cross-sensory correspondences emerge from the Romantic rupture with genre as part of an overarching project of the synthesis of the arts. The strategy reveals new forms, but does not necessarily unveil any mysteries unless we consider the forging of a new artistic language a mysterious act. Thus in Baudelaire s essays on music, poetry, and painting terms from one discipline illuminate another. Similar language appears in the writings of Klee and Kandinsky and other artists of the 20th century Western avant-garde. Experimentation with sensory fusion continues in new media art. Artists who portray themselves as techno-shamans often invoke its visionary aspects. Yet in many respects fusion of the senses within the Baudelairean tradition is a fusion of and within language, a metaphorical union rather than a physical one. Indeed, we have to ask if the vision implied by sensory correspondences resides in the poetic psyche or in poetic language, whether it operates as an experience or as a symbol pointing beyond experience.

If we shift from the poetics of intermedia to its compositional methods, we find a long history of the correspondence of musical tones and colors, frequently emerging from religious or mystic traditions such as Pythagoreanism or Tantric symbolism. Many systems of correspondence have been proposed, but like synesthesia, they are all arbitrary, a product of intuition and cultural associations. This doesn t particularly matter. To the extent

that intermedia includes non-verbal media, it emphasizes cross-modal structure over metaphor or other poetic tropes. In non-verbal intermedia, metaphor simply provides one more method for relating sensory qualities, for mapping parameters in a composition in order to create large-scale structures. Though there are exceptions, what s striking about structural as opposed to metaphorical cross-sensory composition is its frequent dependence on technology, whether mechanical keyboards, tube-based magnetic fields, or microprocessors.

With the advent of digital multimedia and real time interaction and performance with computers, we can achieve a degree of precision and synchronicity of events that was not possible even just a generation ago. Moreover, digital media enable compositional structures to operate at all levels of granularity and with a degree of abstraction that places all media on the same plane, reduced to binary data. Perhaps now we can even begin to answer some of the old visionary questions. Can a synthetic experience of sensory coupling stimulate heightened mental states? Can cross-sensory structures actually be perceived, or are they just a compositional device? Whether perceived as forms or not, will cross-sensory composition prove to be memorable in the same ways that paintings or music are? I suggest that the answer to these questions is a qualified yes. Other questions Will digital intermedia emerge as a distinctly new artform? What directions will it take in the coming century? can only be answered by our own engagement with artistic practice.

At least two extra-artistic considerations drive the development of digital intermedia: interface design and data visualization. Much as photography emerged simultaneously as a scientific recording method and as an artform, digital intermedia will likely emerge in some forms in science and engineering even as it emerges in different forms as art. The trend of interface design to higher resolution, 3D immersion, and expanded interactivity is made possible by the evolving capabilities of hardware and software, but technology alone doesn t account for design. Beneath the technology one may detect a deeper urge to create our own natural world, where all the senses are engaged and where all sensory events are potentially manifestations of underlying (and meaningful) structures. The amplification of the interface helps to solve a very concrete problem: the representation of large data sets. When we run out of visual methods for representing parameters of processes and datasets, sonification seems a natural continuation. When we are immersed in virtual spaces where we can see, hear and feel complex datasets or processes, we may begin to understand their underlying structures, invisible, inaudible, and intangible though they may be.

We may consider immersive spaces as part of the cultural geography we inhabit, places where desire inscribes possibilities of plenitude or frustration. As a form of immersion, intermedia constitutes such a space. Its visionary aspects represent the inscription of desires for plenitude, which are potentiated by the physical sensations of sensory fusion and immersion. Potentiated but not fulfilled: absent from our productions, visionary experience happens on its own time. The elusive nature of plenitude, for which immersion and sensory fusion remain symbolic equivalents, reveals the potential for frustration that haunts all desire. From the interplay of plenitude and frustration we make art.

Artists working with digital technology also visualize datasets and processes. Steven Holtzman created musical compositions based on database transactions.[5] Eduardo Kac s Uirapuru, [6] maps network traffic among servers in the Amazon region onto the sounds and motions of virtual birds and fish. In composer Insook Choi s work in immersive VR, a sonic tool for investigating datasets could just as doubles as a virtual instrument for performing music. Jack Ox s work in mapping musical to visual art functions both as a visual recreation of musical structure and as a process, the transmutation of music to fragmentary landscape. My own work involves abstract parametric spaces that can generate visual, musical, and performance works with cross-modal structural elements.

In his essays on pre-scientific thought, Gaston Bachelard grounds Baudelaire s notion of correspondences in a sensual experience of the world which can point to underlying ontological values within language and thought. Poetic language imposes conscious form on unconscious matter: the forms we use to compose the world define our psyche. Multi-sensory metaphorical constructs reveal the inner processes of the imagination, where sensations merge. This bears a curious resemblance to the exploration of large data sets, where multi-sensory constructs allow us to understand and manipulate data. In his discourse on the poetics of the four elements of antiquity, Bachelard declares that matter is the unconscious of form. We could extend the trope and say that data is the unconscious of visualization, matter for which we struggle to develop forms of representation.

Where the data we strive to represent is our own being-in-the-world, multi-sensory mapping of structures may also produce visionary insight. We just aren t sure where to locate it. To say that visionary experience arises from an inner unity of the senses or from a pre-verbal state of the creative imagination merely shifts the discourse from linguistic and compositional structures to qualia or thought-experiences whose precise nature we cannot determine. What s to be said about non-verbal experience? We might best express it non-verbally. That s another reason to create art.

While we cannot predict the trajectory of intermedia across the imaginary of the twenty-first century, it clearly holds out the possibility of new forms and new experiences. This, at a time when we had begun to suspect that formal invention had collapsed along with the historical avant-garde, may even permit us a brief moment of euphoria. Then we would do well to remember how, at the beginning of the twentieth century, the cult of synesthesia promised a mystical revelation that did not transpire. At the beginning of the twenty-first century digital intermedia points to a perceptual revelation that may well transpire. The instruments are in our hands and it seems we have only to learn to play them. To what end and for whom? As much as with the formal and technical issues of digital intermedia, we will also have to grapple with this question.

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The Touch Through Time: Raoul Hausmann, Nam June Paik and the Transmission Technolgies of the Avantgarde

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Abstract

The paper discusses the interchange between technology and historiography in Berlin Dadaist Raoul Hausmann s Optophon (1920), a synaesthetic instrument designed to transform sound signals into light signals and vice versa. Hausmann s invention was part of his attempt to formulate a new mode of perceptual presence, which involved both a particular notion of tele-visuality and a new interruptive form of tactility which could perhaps be described as the construction of a transactional synthesis beyond the realm of the corporeal. Hausmann s renewed focus on electronics in the 1960 s highlights the historiographic implications of this construction. The Optophon could on the one hand be seen as a rudimentary piece of groundwork which supported the technological consciousness from which new electronic-related art, such as Nam June Paik s new television art, was emerging. This was, notably, an art predicated in the telematic and the immersive. On the other hand, Hausmann s 1960 s elaboration on the theme made it increasingly clear that his investment in the telematic was destined to produce an interruption at the site where such art-historical legacies were constituted.

Excerpt

In 1996, media theoretician Erkki Hutamo gave us the following historiography of the field that we call art & technology: While the earlier modernist avantgarde approached technology in terms of a progressive series of inventions that would change the techniques of art-making in fundamental ways, a later, postmodernist , avantgarde, questions this technological progression-story by engaging critically with the epistemic and ideological dimensions of such technologies. I m not so sure about this version of the history of art and technology, which seems to follow a bit too neatly the idea of a historical or periodical division between properly modern vs. postmodern concerns. I m not so sure, because the early avantgarde material I have researched seems, rather, to show how concerns with technological innovation go hand in hand with a reflection on the ontological status of the work of art which challenges in fundamental ways both the standard art-historical and technological models of invention and progress. And it is, I believe, through this intertwined reflection on technology and historiography that we get some of the first glimpses of the ontology of that strange thing that we call the intermedia work.

Let me try to be a bit more concrete. When speaking about the early avantgarde s fascination with technology, I m generally referring to a series of fantasies around —and practical explorations of - the implications of the new recording and transmission technologies (photography, film, sound recording, telephony, telegraphy and radio) —that is, technologies which suggest not only new modes of production, but even more succinctly, new modes of reception. Peter B rger, among others, have defined the mode of reception of the avantgarde work (i.e the work that is better understood as event than as object) as collective. Yet this notion of collective reception is invariably understood in terms of the temporal unity of the historical moment when the event-work has a revelatory function within a particular social or cultural context. In my view, certain features of these technologies makes for a counter-proposition which hints at a different understanding of collective reception: I would suggest that it resides precisely in movements of temporalization which cuts across the singular moment of the work s allotted presence within the sequence of historical events - a distribution or transmission of effects which gives the event-work the capacity to so to speak wring itself out of time . What I have been researching is the case of such a temporal complication in the historical and technological interchanges between two pioneers of intermedia art.

In 1919, Berlin Dadaist Raoul Hausmann hinted at precisely such a new temporality in a manifesto called The Cut Through Time (Der Schnitt durch die Zeit). Hausmann theorized this notion of a cut through time in conjunction with his speculative researches into the field of tele-technology. His concerns were, however, not tele-technology in general, but some very specific features of the televisual in particular, in its difference from telephony and telegraphy (and so all the more speculative as television was at this stage yet to become a technological reality). For Hausmann, the problematic question of the ability of the event work to live on - a question which haunted avantgarde historiography from the very beginning - could be reconsidered through his idiosyncratic notion of the televisual. The idea of a collective reception could be re-imagined through what Hausmann saw as a particular televisual type of touch that would cut through time and space.

At this point, I d better retrace my own steps. Given the new mode of collective reception, it is perhaps symptomatic that Hausmann s TV-fantasies did not simply appear to me, writ out large, by studying Hausmann s work alone. Rather, they reached me as a ghostly apparition, or what Gilles Deleuze would perhaps have called an originary repetition, in the early 1960 s televisual researches of Nam June Paik, which intermingled with Hausmann s subsequent production of an allegory of avantgarde televisuality.

In 1967 —i.e. in the early days of video art , Hausmann created a scenario with strongly historiographic overtones. After a new bout of theoretical writings on electronic arts and cybernetics in the early 60 s, he now produced a transcript of an entirely fictitious television talk show, in which the recently deceased Dada artist Jean Arp gets interviewed by an admiring French talkshow-host. It would lead to far to go into the details of this text (which is actually very funny), so I ll only give you a brief summary of what I see as its

allegorical function. Hausmann placed Jean Arp on TV, because he imagined a natural place for Arp s work in the flickering light of the 1960 s TV-culture. If Arp s famous concretions (his decidedly non-electronic work with the concrete materiality of found or natural forms) were a genre of natural creation, they must be identified with the mutating or self-differentiating processes of an electronic nature. For it were precisely such processes of growth or mutation which both returns to and differentiates itself from the particularity of one material being that Arp had referred to when he named his non-representational works concretions (rather than abstractions). From Hausmann s 1960 s perspective, Arp s concretions might then just as well be called t l concretions —a neologism introduced for the first time in Hausmann s fictional TV-transcript. By this strange concept Hausmann indicates the spatio-temporal dimension of such a process of self-differentiation, in which the presence of a singular being is multiplied: if presence is multiplied it potentially evokes times and spaces that are beyond the most immediate reach and touch of the concrete body. By insisting on this principle, Hausmann inscribed Arp s concretions in the relatively new history of television art. They were now seen to reside at the core of the televisual principle of electronic image transmission, since this principle was also at the core of Arp s work itself.

What is significant here is that with this reinscription of Arps work in a new technological realty, Arp is displaced from the historical perspective in which he is simply placed in one historical context, i.e. positioned as a precursor to the recent history of electronic arts. In the terms of the principle of t l concretion, his historical singularity has so to speak been multiplied or transmitted. It has taken on presence at the core of the current artistic researches in the field of electronics and telecommunications — at the pointof his own death. By multiplying the present —creating or inventing time, that is — telecommunicationsseem to have the capacity to give the lost time back to the dead: time being of course the one thing which the dead do not have.

In other words: Hausmann places the deceased Arp on live TV in order to illustrate the uncanny tendency of the original avantgarde to present itself once more in the face of its own death: the new realm of electronic arts of the 1960 s above all testifies to this continual and paradoxical presentation of the avantgarde and its concrete or live events. The imagined distance between two separate moments in the history of art & technology have, in other words, collapsed: They are now radically and irrevocably in touch. It is a touch that cuts through time, a particular and complicated case of what we might today call tele-touch.

In this way, this piece of fiction also serves to provide a perspective on the uncanny coincidences or repetitions in the televisual concerns of Raoul Hausmann and Nam June Paik respectively. In 1921 Hausmann had called out for a new electric, scientific painting , which he tried to realize with a groundbreaking intermedia invention called the Optophon — a device which would transform sound signals[1] into light signals and vice versa, unhinging the stability of the traditional sound/image division. Paik s 1961-63 researches in TV which led to the invention of video art and the development of the videosynthesizer were notably predicated on the same emphasis on the fundamental continuity between sound signals and light signals (they share the same electronic wave structure and are only separated by a difference in frequency), and described as a new mode of musical composition and painting rolled into one.

It is at this point that the particular features of electronic image transmission — in its difference from other tele-communicational media - becomes crucial. Both on a practical and a theoretical level, Hausmann s development of the Optophon, displaces the telephonic or telegraphic paradigm in which all interest is focused on the line of exchange itself, it s ability to connect across an impossible physical divide. On the practical level, an early, and very rudimentary, explanation of the working principle of the Optophon explains how the sound of the voice on a telephone might occasion a mutation in the light signals of a carbon arc lamp when set up so that it would create an interruption in the lamp s induction circuit: the light signals would then adapt to and follow the sound signals. (In 1933, however, the Optophon was patented as an improvement on the calculating machine principle). No longer a medium for a person-to-person connection, the telephonic apparatus had here, in the earlier version, become a vehicle for a mutation of signals which cut across the traditional sound/image separation.

On the theoretical level, the invention of the Optophon was directly linked to the idiosyncratic concept of Presentismus which Hausmann launched in 1921, in the first of a series of texts which deals extensively with the significance of tele-technologies for the experience of new modes of bodily presence[2]. In his view the crucial change comes not with the communicational efficiency of crossing impossible divides, but only with the technologies which allows us to experience a fundamental collapse of the very perspective through which two distant points in space or two discrete points of presence could be said to be connected , as if a line had simply been stretched between them. It is here that the telephonic paradigm is supplanted by a strange concept of televisual tactility. Hausmann s concept of Presentismus points to a differentiation in temporality, which is also a differentiation in the perceptual moment itself. This differentiation is understood in the terms of a new kind of tactility - a kind of ex-centric sensitivity which can be realized only by means of what Hausmann calls haptical and telehaptical transmitters . Essentially, his notion of Presentismus was an attempt to rewrite the neo-Kantian philosopher Ernst Marcus s 1918 theory of ex-centric sensitivity in properly televisual terms[3]. According to Marcus, perceptions and sensations exceed the limits of the proper body: our sensations appear at the place of the object towards which attention is directed, taking place in the world rather than in us. For Hausmann, this theory served as the vantage point for a new understanding of the relationship between the optical and the haptic: an idea which basically depends on a new understanding of the nature of light. To Marcus s theory Hausmann adds the notion that in an electronic universe there is there is no fundamental distinction between actual bodies and effects of light[4] Bodies are penetrated by light, and this accounts for the unlimited expansion of their touch — a touch which,in Hausmann s words, reaches all the way to the stars [5].

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[1] Hausmann, "Optophonetik", reprinted in Erlhoff (ed) Sieg Triumph Tabak mit Bohnen. Raoul Hausmann Texte bis 1933. M nchen 1982

[2] "Presentismus. Gegen den Puffkeismus der teutschen Seele", reprinted in Erlhoff (ed.), op.cit.

[3] Hausmann was influenced by Ernst Marcus book Das Problem der Excentrischen Empfindung und seine L sung, Berlin, 1918

[4] Hausmann, Das Universale Funktionalit tsprinzip in der Optik, Typescript 1922, available in Berlinische Galerie.

[5] Hausmann, Presentismus, op. cit.

2 PERFORMANCES IN THE 21ST. C VIRTUAL COLOR ORGAN

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Abstract

Jack Ox is the visual artist half of a collaborative team consisting of herself and David Britton, programmer. She will talk about the development of their virtual reality immersive project called "The 21st C. Virtual Color Organ" The Organ is an instrument which can visualize multiple musical compositions. It can be outfitted with separate color and image systems, depending on the different needs of various compositions. Ox will describe "Im Januar am Nil", composed by Clarence Barlow, a computer assisted composition based mathematically on a 2 dimensional spiral and played by chamber orchestra. She will also talk about the in progress collaboration with Alvin Curran to be called "Gridjam ". This piece will be performed by geographically separated musicians inside their own immersive environment over the AccessGrid.

1. Introduction to the Color Organ

[3[A collaborative project., David Britton and Jack Ox are the principles with a growing list of generous contributors from both industry and high performance computing universities. Britton is responsible for the graphics programming and the meta-architecture of the programming structure, while Ox contributed the concept, visual images, musical analysis, visualization systems and texture maps The 21st Century Virtual Color Organ is a computational system for translating musical compositionsinto visual performance An instrument, like a musical instrument, it uses supercomputing power to produce 3D visual images and sound from MIDI files, and can play a variety of compositions. Performances take place in interactive, immersive, virtual reality environments such as the [2] CAVE, [1]VisionDome , or [2]Immersadesk.

Because it is a 3D immersive world the Color Organ is also a place- that is, a performance space. This interactive instrument consists of three basic parts:

1. A set of systems or syntax that provides logarithmic transformations from an aural vocabulary to a visual one. This includes different color systems which correspond to elements within musical syntax.
2. A 3D visual environment that serves as performance space and the visual vocabulary from which the 3D environment was modeled. This visual vocabulary consists of landscape and/or architectural images and provides the objects on which the syntax acts.
3. A programming environment that serves as the engine of interaction for the first two parts.

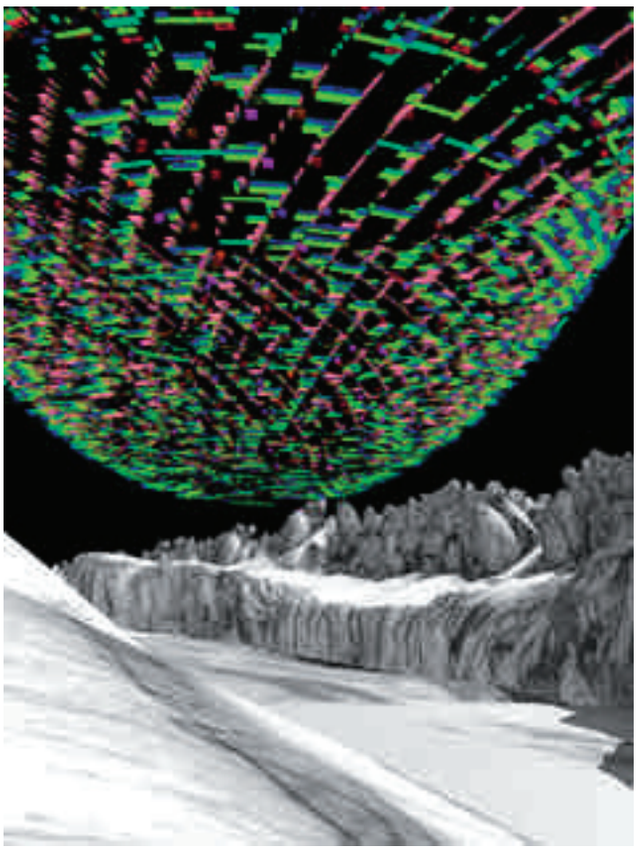
2. The Viewer's Experience

When the performance begins the viewer/listeners are in a world of hand drawn landscapes which have been modeled into 3D. All of the landscapes are in black and white with the sky completely black. As the music plays a three dimensional colored and image embedded geometric structure takes shape in the space over the landscape. This is constructed from flat pictures of the landscape images representing the instrument families which produced them. They are colored a specific hue based on a timber analysis of which instrument is being played and what the particular playing technique is at that moment. The saturation of the color reflects changing dynamics (loud and soft). These flat strips of landscape are placed up and down in vertical space by their pitch. A higher pitch will be higher in space and a low pitch will be placed closer to the landscape below. The width of the strips is controlled by the volume (attack) of the signal. After the music has been played there remains a complete sculpture which can be further explored in an interactive way. The viewer can move at will through the space and touch elements of the sculpture and hear the sound which originally produced it.

3. Two Performances in the Organ

3.1 "Im Januar am Nil"

Recently completed is the visualization of Clarence Barlow's "Im Januar am Nil" (1984) for chamber ensemble including soprano saxophone, clarinet/bass clarinet, drums, piano, and strings. Barlow, an internationally known composer, is also professor at the Kunsthochschule in Cologne and director of the department of Sonology at the Conservatory of Music in the Hague. he composed this piece on a computer with a melodic structure coming directly from the mathematics of a spiral. With regularly placed spokes going from the center of the spiral out, the space between the crossing points of the spikes and spiral determine the beginning of each melodic sequence. The lengths of these are extended as the turns around the enlarging spiral grow larger. For performance the strings are micro tuned in order to reproduce formants naturally made by vowel sounds.



Clarence Barlow's "Im Januar am Nil" visualized over desert Organstop

3.2. Gridjam

Plans are currently being worked on to realize an improvised musical jam by players located at different geographical points on the AccessGrid in the US, with both the MIDI controlled 3D visualizations and synthesized sound files coming together in any connected immersive environments the Grid. This experiment will be called a "GridJam". Presently, Boston University and the High Performance Computing Center at the University of New Mexico are collaborating with us. Real time video conferences are successfully sent over Internet2 with events, such as the Chautauqua series from the National Computational Science Alliance (NCSA) , becoming normal. . The Color Organ offers a unique application with which to develop further these communicative capabilities for Internet2.

We asked Alvin Curran, an internationally known composer who also is a professor at Mills College, to order the structure of the jam to be performed on the AccessGrid. He must musically deal with the one second lag of sound experienced on the Grid, but has experience creating musical events that are produced in several geographical locations simultaneously in his concerts which use the radio airwaves.

Curran has been collecting/creating a vast library of electronic sounds for many years. The sounds are MIDI files which are accessible by MIDI keyboard. In order to realize Curran's work in the Color Organ a new metaphor based on his vocabulary and structure had to be created. In the first and still only organ stop there are eight categories of landscape 2D texture maps and 3D models. These eight images had been connected to different families of instruments in music performed by orchestral instruments. Now, the library of sounds which Curran has sent was sorted into eight groups, or sets, which are each connected to one of the eight 3D landscape units and sets of texture maps. Ox had a program made in MAX by Holland Hobson to transform sound files into graphic representations and MIDI files. She then analyzed the visual representations, grouped them, and is creating 3D polygonal shapes which reflect the analysis of the sound file. These appropriately visually textured and colored mapped shapes will be what is generated by the Color Organ when a sound is played by one of the Gridjaming musicians, in a preassigned path.. Each of the groups will be played in a specific quadrant of the compass, over the 3D landscapes.

In Ox's system each one of the eight categories is further divided by colors, which also attached to the image. Each of these combination texture map/color will be associated with a particular sound. The metaphor here is about mathematical sets. One group of objects is being associated to another, with the connection being similar relationships between the objects in one set with another set of objects and their interior relationships. It is even more abstract than the connections to sound production in instrument groups depicted metaphorically by landscape structures.

Each of the sounds are being 3D modeled by hand (meaning each one is made by a person and not a program) into shapes which reflect the changing dynamics of a sound file and shoe the pitch changes when looked at from the front. While at the University New Mexico during an artist's residency at the Albuquerque High Performance Computing Center and th Art and Technology Center Ox was able to learn and begin to develop a methodology for modeling the the analyzed information into appropriate shapes. She then was able to further refine the process and produce many of the objects with the help and support received during a residency at the LUTCHI Research Centre, Department of Computer Studies at Loughbourgh University.

There will be four musicians stationed geographically apart on the AccessGrid. Each will have a MIDI keyboard with two of the sets of sounds/texture maps/ color. There may be one set of sounds which would be part of a common vocabulary, to be used by all musicians. Different categories of sounds will also be assigned a different path through the virtual space and one will be able to study the virtual musical sculpture left from the real time performance and present in different nodes along the Grid. Curran's multi pitched sounds will be located on the Z access by their location on the keyboard. The performers will have practiced together at Mills College where they are Curran's students, and will have worked out strategies for the jam.

Reference

1. http://www.elumens.com/products/visiondome.html
2. http://www.evl.uic.edu/EVL/VR/systems.shtml
3. Ox, J., Britton, David "The 21st Century Virtual Reality Color Organ", (2000) IEEE July- Sept. http://www.computer.org/multimedia/mu2000/u3toc.htm

4. Aknowledgements

5. The Organ has been supported by the **NCSA** at the **UIUC** including time in their CAVE and also funds for software support. **SGI** has given hardware support and **EAI** has given *Sense8' s World Tool Kit* the program being used to develop thOrgan. **Ars Electronica** provided the initial research and development money, Robert Putnam from the **SCVGroup** at **B. U.** is doing the interactive, kinetic sound placement and 3D localization. **ASCI** is supporting the project as the umbrella organization to receive non-profit funds. The **U. of Loughborough,**, UK gave support for the project when Ox was a visiting fellow there during the summer of'00 and "02. She also worked at **AHPCC** and **ATL** at **UNM**

Rapid Fire: Performative Experiences in Scanning the Visual and Auditory Scene

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Abstract

The author discusses her work designing and creating a computer based musical instrument system, called Intuitive Ocusonics, with which a performer creates sound using live eye movements. The translation of different modalities central to the instrument design involve making connections between the temporal act of listening and the temporal act of seeing (active vision).

1. Intuitive Ocusonics

Andrea Polli has been developing and performing with the Intuitive Ocusonics system for over five years, each time specifically focusing on working with improvisational musicians using both traditional and non-traditional instruments. By exploring processes used in musical improvisation, Polli works to provide a temporal document of the decision making process, infusing computer-based interactivity with the potential for deep structural interaction between the different sensory modes of human perception.

To support work with the Intuitive Ocusonics system and the production of an Audio CD, Active Vision, Polli has been an artist in residence at The iEAR Institute at Rensellaer Polytechnic, Harvestworks Digital Media Arts Center, The Center for Research in the Computing Arts at The University of California at San Diego, and Franklin Furnace in New York as part of The Future of the Present webcast performance series. [1]˚˚In addition to various venues internationally, the Intuitive Ocusonics system has been presented at V2 in Rotterdam; the N-Space Art Gallery of SIGGRAPH; and The Monaco Danses Dances Forum.˚ Early stages of this performance work and research is documented in the article Active Vision in the October 1999 issue of The Leonardo Journal.˚[2]

Figure 1: Performance at the SIGGRAPH Õ01 N-Space Art Gallery with Hans Fjellestad, Nathan Hubbard, Marcelo Radulovich, and Damon Holzborn August 15, 2001.

Reference

[1] See http://www.franklinfurnace.org/ tfotp00/polli/index.html
[2] Polli, Andrea. *Active Vision*. Leonardo: MIT Press Cambridge, Vol. 32, No. 5.

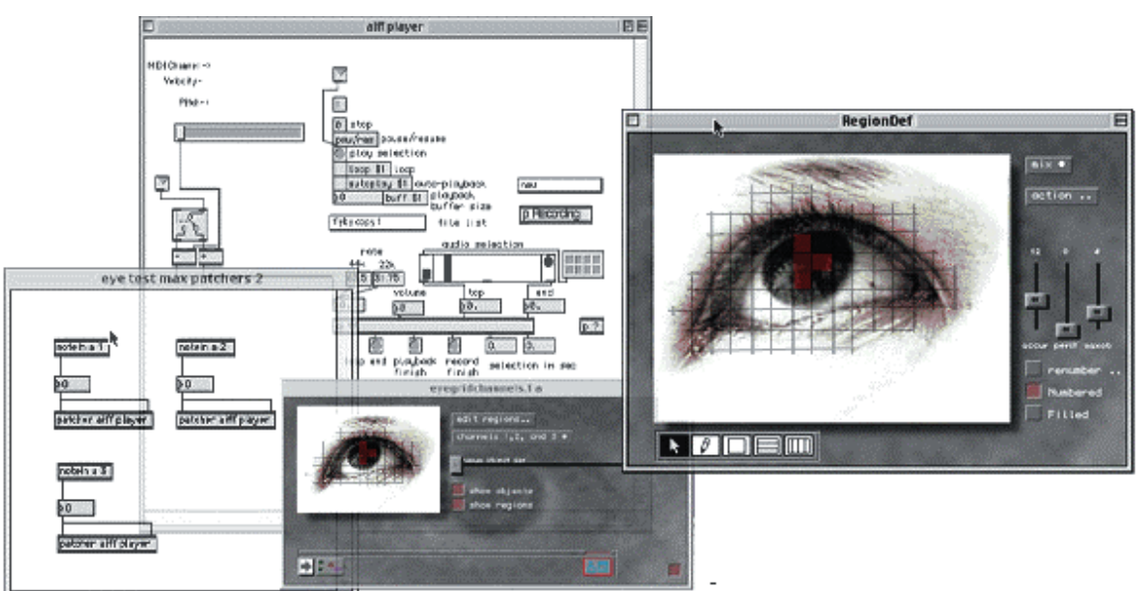

Figure 2: Example of the interface for the Intuitive Ocusonic system using BigEye and Max/MSP.

Fluxus, Intermedia and Language Experimentation: the Reconstruction of Media at the End of Language.

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Abstract

The critical role played by Intermedia in reevaluating aspects of art, music and performance in the early 1960s has gained increasing recognition, a similar important relationship between Fluxus language experimentation and intermedia has often been overlooked. Fluxus and the artists who associated themselves at various times with this rubric had a significant roll in the development of, and explorations in intermedia in the late 1950s and 1960s. This part of the Fluxus project can be connected to four Post-Modern challenges to both language and media determinism: the enactment of a multiplicity of meaning systems (and states) and the apparent devaluation of specific meaning; a focus on the structure of discourse as opposed to its operative function; the loss of subjective definition in culture and discourse; the denial of historicity in social and linguistic change. This essay will specifically consider the first two of these aspects in depth because it is with regards to these two that Fluxus developments in intermedia and its intersections with language and art are most clearly evident.

1. Paper

This discussion of some of the explorations that Fluxus artists pursued and/or raised is not an attempt to historically locate Fluxus or define its project, rather it is a consideration of some Fluxus works and ideas as related to experimentalism and intermedia. Prior to discussing any such particular concerns and ideas it is necessary to consider the general philosophical attitude which pervades many of the works and activities often grouped under the term Fluxus. In all activities associated with Fluxus there were a number of general, yet formative, aims and concerns that shaped both the nature and the form of the works produced, whether they be in literature, poetry, music, performance or the visual arts. These include but are not limited to the following:

1. A rejection of the notion that art is first and foremost a process of production that creates a unique object.

2. A stress on the non-hierarchical nature of the world outside of human impositions.

3. Eschewing the role of the artist as special and as the principal focus of the work and/or its appreciation.

4. An emphasis on the primary significance of process, change and duration in the creation and presentation of works.

5. Discarding the significance of boundaries between types of works through the use of new media, intermedia and even non-media.

One of the more fundamental challenges in thinking and acting precipitated by Fluxus was to no longer require a clarity of concept or purpose as it relates to communication. The general Fluxus attitude, or what I call world view, seeks to open up the possibilities of enactment as a manifestation of direct participation; participation as part of a process which emphasizes the power of play, association and creation without predetermined definitive characteristics or goals. In Fluxus works, processes are enacted to establish multiple possibilities containing both patterns of presence and absence that create both an ambiguity of meaning as well as its opposite.

In a general sense all Fluxus activities seek to question meaning and significance as fixed, pre-determined, or even determinable through the functioning of what has been described as "higher social contracts," that is social situations as a manifestation of power relations and knowledge. Fluxus enacts existence (activates it) but does not fall back on ontologies as a justification for the processes on which it depends, or more simply, participates in. Thus, Fluxus does not seek to explore or manifest the ultimate nature of existence, reality and experience, it instead establish conditions, mostly through the performance and presentation of the works themselves, which are based on a of a recognition of a fundamental importance of situational conditions in the creation and recreation of meaning. In relation to these situational processes, and the works that enact them, Fluxus seeks to shift from traditional utilitarian-based proscriptions to a more open-ended participation in the processes themselves.

From the very beginning, in the late 1950s and early 1960s, Fluxus refused to see the creative arena as clearly or rigidly segmented into various arts. Many of the processes utilized by Fluxus artists directly illustrate and enact the diacritical workings of communication (in art, language, music, etc); the joining of disparate elements from within established meanings to create new and unexpected forms, meanings and awarenesses. This essay in looking at a variety of disparate Fluxus experiments and ideas, some of which might not seem to be literary, or poetic in nature, is a reflection of this aspect of the Fluxus attitude which see no validity in categorization. Thus, even though individual works may and do vary in degree of emphasis toward one art or another, they are also what Dick Higgins has called intermedial. For one of the most radical acts of Fluxus is to see all works as literary, musical, visual, and performative rather than just one form or another. Fluxus challenges our traditional separation of media into types and/or genres as part of a process of exploration of a larger cultural shift; from a text based linear culture to a visual or field oriented culture. Intermedia as a concept is grounded on a balanced, but shifting triad: media dispersal, experiential activity and a resultant post-cognitive awareness. With this as an understanding the Derridian concept of difference becomes

significant not only as a means of accessing the gaps in which intermedial forms exist, but also as a lesson that interpretations of the concept of intermedia must shift from a retrospective stance, which attempts to construct original meaning or truth, to a prospective stance, which explicitly welcomes an indeterminacy of experience and meaning. Many Fluxus type works are intermedial in two ways; first, materially and second, conceptually. The material aspects of Fluxus' intermedial nature is fairly evident in the descriptors that are applied to the work; the works are called "visual poetry," "action music" or "performance art."

In addition to these forms of intermedia, Fluxus works also establish an intermedial role for the artist/poet/musician and even a cognitive intermedia, a concept which I will return to in a moment. One aspect of the intermedial role of the creator is fairly evident, that is if the artist is creating works that exist somewhere between media, they themselves must act as creators in that same space between media. Another potentially less evident intermedial role for the artist is that their central function should be a both that of discoverer and educator. For many individuals associated with Fluxus the artist/musician/poet is no longer a person tied to the craft of a particular media, but becomes an explorer of perception and a public educator who moves between traditional media categories in a process of discovery and communication. A key understanding for many Fluxus events is both a shift in the nature of our perception and a call for direct action by the viewer/reader. All Fluxus work contains a seemingly contradictory range of possibilities from simplistic to complex, accepting to critical, humorous to serious, but in all of these possibilities what remains a nexus is the modeling of a potential new paradigm beyond the traditional confines of language.

The general focus of many Fluxus and intermedial type works is on the process of meaning-making that highlights the continuous deconstruction of established meanings and the projection of new possibilities and this then becomes the "space" in which media can truly be reconstructed in new and meaningful ways. This process is not actualized as a means to achieve an end but as part of the act itself, which is formed through a self-perpetuating process. Most Fluxus works create a potentially infinite play of associations and difference. The relational nature of meaning production is evident in many Fluxus works that stress the notion of differing situational interpretations. The meaning evident through Fluxus events and objects shifts and changes because they are tied to, and activated by the situations in which they are viewed or enacted. Fluxus works not only recognize, but in fact performativly activate the nature and workings of the concept of difference. Works such as Alison Knowles' *Performance Piece #8* (1965) play off of the understanding that it is only through our own limited view of difference and its workings, from within the operation of language, culture, philosophy, etc., that we gain any glimpse of cognitive and/or linguistic operations at all. The score for Knowles' *Performance Piece #8* creates such a context for engaging with conceptual frames:

Divide a variety of objects into two groups. Each group is labeled "everything." These groups may include several people. There is a third division of the stage empty of objects labeled "nothing." Each of the objects is "something." One performer combines and activates the objects as follows for any duration of time:

1. something with everything
2. something with nothing
3. something with something
4. everything with everything
5. everything with nothing
6. nothing with nothing

In this work, and others like it, the task that confronts the performer is to directly engage with the materials at hand (both something and nothing as Knowles calls them), to enact a perceptual process as the basis for action (the 6 listed actions all require a sense based perception as an initiating point) and simultaneously carry out such actions through one's cognitive filters (the performers understanding of words such as something, nothing and everything). The referential nature of Fluxus works like Knowles' *Performance Piece #8* reflects a recognition of meaning as a construct of the particular framework, or situation in which it is placed or occurred. This piece thus manifests itself not as a media determined work or as a series of fixed points but as a conditionally determined field, bound up with contradiction or the potential for it. In Knowles' work and others like it the process of exploring such a field is initiated by a referential whole, that is the intersection of both the score and the performer's conceptual understandings, and all of these elements ultimately "makes" the work a possibility.

This new kind of *Making* is at the heart of the lessons of Fluxus and one of the keys for current practitioners of new media. In creating open-ended pieces, as most Fluxus works are, the work must take on a new set of values and concerns. They are not intended to create a new media or center, but instead aim to deflects us back to one's starting point, the world itself with all of its vagueness, dislocations and potentialities. The Fluxus investigation of the concrete is a simple insistence on experience as an interaction between the subject (viewer) and the object (the performance, the poem or the work) which seeks to minimize the potential closure of play. This emphasis on the concrete and a parallel absence of singular or dominant abstract concepts or ideas, what might be though of as the conceptual media, is enacted in Fluxus works as part of an attempt to extend potential conceptual domains and the play of signification infinitely into what I am calling a cognitive intermedia. The rejection of hierarchies, fixed meaning, and denotative forms, explored by Fluxus artists, are all related to an awareness of, and emphasis on the lack of a context bound center, that is media, whether it be physical or cognitive. The ultimate awareness for us today is that intermedia is not just a recombination of existing media to create a new media, but in fact is a rejection of the bounds of both media and language. The free or open play of meaning, through the substitutions of one signifier for another, in intermedial work can no longer be called to a halt, or grounded because it is only through the presence of a center, or media, that the play of substitutions can be arrested. The lesson of this kind of infinite play is that the process of unending substitutions is an act of life. The joy of such a recognition is that traditional sytematics are no longer valid. One's field of awareness is of the potential for infinite possibilities of new and differing meanings; a world where we can truly hear literature, read art and see music.

Why Should I Get a New One If the Old One Ain't Broken?: Aesthetics, Pragmatics and Social Tactics Of Low-Tech.

Co-organizers: Nell Tenhaaf, Paul Vanouse
Panelists: Doyon/Demers, Haruki Nishijima, Alexei Shulgin, Nell Tenhaaf, Paul Vanouse
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Overview:

While the title of this panel is reminiscent of American country music vernacular, it is in fact more contemporary genres of popular music that could be seen as forerunners of this topic. For instance, hip-hop music has kept the analog turntable as its primary tool while using digital technology more sparingly. It is the intent of this panel to present several projects by "high-tech" artists that incorporate older, technologies often deemed obsolete. Each of these projects are embedded within contemporary electronic art practice and offer deep investigations, both conceptually and technically, into areas including: mobile computing and interactivity; scientific, physically-based visualization; computer as entertainer; networked telematic art; and artificial-life. The artists on this panel attempt fluency between analog and digital electronics; old surplus and new technologies; wave-forms and data-packets. For example, Alexei Shulgin has turned his 386 into a singing, pop-rock/cyber-punk virtuoso named DX386. Similarly, Nell Tenhaaf uses low-tech in the sense of low-res, with the intention of investigating the thresholds between media . She is building LED matrices that display both very low-resolution video and swarm algorithms.

The 2002 ISEA theme "Orai" seems to embrace such interests in familiar, everyday technology, and it also suggests the project of community-building that several of our panelists will bring forward: "It refers to comings and goings, communication, and contact, as well as streets and traffic." All of the artists on this panel are involved in bringing people together through technological devices, but for several of the panelists both social exchange and shared experience of an environment are overt elements in their work. For example, both Doyon/Demers and Haruki Nishijima reveal and manipulate invisible signals that permeate the everyday public spaces we inhabit, and translate those into an experience of interconnectedness for viewers. Likewise, Paul Vanouse works with bicycles and pedal-powered, interactive audio tours that explore contradictions in the built landscape as the rider traverses it.

About the Panelists:

Doyon/Demers (Canada) are interdisciplinary artists who have worked together since 1987 in Montréal, Canada. These "socioaestheticians" have produced many performances and events incorporating both rural and urban environments, in which ordinary citizens become both the material for the work and its dispersed authors. They are currently doctoral students at Université du Québec à Montréal.

Haruki Nishijima (Japan) is based in Japan and has become known internationally for his performative installation "Remain in Light". It was the winning presentation in the Toride (Tokyo) Recycyling Art Project in (2000) and also a co-winner of the first prize in Vida 4.0 (2001). It is built from fragments of analogue communication data (radio, cordless and cell phones waves) gathered in the street using an "electronic insect net".

Alexei Shulgin (Russia) is a Moscow based artist, musician, curator, and teacher. In his work explores the boundaries between art, culture and technology in their relation to "real life" effects and vice versa. His favorite methods are mixing contexts and questioning the existing states of things. He is the inventor of Form Art, leader of 386 DX cyberpunk rock band, webmaster at fu-fme.com and has participated in hundreds of exhibitions, festivals and conferences on art/new media.

Nell Tenhaaf (Canada) is an electronic media artist and writer living in Toronto, Canada. Her interactive installation work combines algorithms from Artificial Life with familiar methods of display such as rows of coloured LEDs. These are used to position viewers as "evolving populations" caught in the act of adapting to artificiality in their environment. Tenhaaf is an Associate Professor of Visual Arts at York University in Toronto.

Paul Vanouse (US) is an artist employing pop-sociology and "big-science" in interactive, electronic artworks often designed for mass-audiences. His work, exploring everything from the Gulf War to the OJ Simpson affair to the Human Genome Project, has been exhibited throughout the Americas and Europe. He is an Assistant Professor of Art at the University at Buffalo and a Research Fellow at the Studio for Creative Inquiry at Carnegie Mellon University.

Art-Sciing: Slippery Terminologies and Language Performances in Art and Science Collaborations

Panelist and papers

Sara Diamond: artistic director Banff centre for the arts (Canada), artists, researcher
Paper: Organic and Social Histories: Collaborative Systems, Structures and Metaphors

Tapio Makela: Researcher, Media Studies, University of Turku, Finland, artist
Paper: Interdisclipinary Trouble: Performing Science in Media Arts

Chris Csikszentmihalyi : artist, researcher MIT (USA)
Paper: no title available yet

ANne Nigten: manager V2_Lab (the Netherlands), artist, researcher.
Paper: Iconography in art-sci: schemes, flowcharts and storyboards

Abstract:

Linguistic collisions occur when alien disciplines get acquainted, new meanings appear and misunderstandings occur. In gravitating collaboration towards science and technology, in working with virtual and digital methods, the correspondences in the metaphors of the past need to be analyzed, in nature and tactical media that hold for the collaborative structures of the present.
This panel questions which linguistic aspects are embedded in the different perceptions and desires towards interdisciplinary collaboration. Decades of technical driven technology have provided the impression that keyboard produced language with a tech flavor is the most effective, profitable or ultimate way to communicate. We suggest more effective and appealing visual means of communication for interdisciplinary collaborations.
But there is more to the influence of technology in the field of electronic media art. Ideally, media artists can engage with scientific practice questioning its premises while reflecting critically one's own field. Interdisciplinary collaboration often brings about more trouble than insight, for science is often performed in media arts as a legitimizing discourse, rhetoric or a narrative rather than enacted as a critical knowledge.
This panel is a critical expose on different cross-disciplinary linguistic aspects in media arts, and art - science collaboration. It deals with the influence caused by technical terminology in the field of the media art vocabulary, the creative or artistic opportunities offered by this linguistic collision and it provides alternative ideas for communication based on art and technology practice. We consider structures and metaphors of communication, with reference to a number of artists' and others software, including the CodeZebra project.

Organic and Social Histories:
Collaborative Systems, Structures and Metaphors

Sara Diamond: **artistic director Banff centre for the arts (Canada), artists, researcher**

Sociologists such as Bruno Latour, John Hassard, John Law, and Judith Butler and performance theorists such as Susan Bennett, argue that we perform our identities. Social networks take up meaning through the role of the "actor". There is an aesthetics to the performance of Internet discourse that can be deciphered and analysed through visualization. Once visualized, performance can be used as a tool to enhance dialogue. The participatory nature of the Internet allows the very tools of analysis to become tools of creation. The research will investigate whether social cohesion between disciplines is built in part through aesthetic experience. Given that art and science have developed aesthetics, as suggested by Robert Flake and James McAllister, how are these reflected in the discourse itself?

Synchronous and asynchronous dialogues function as performances. CodeZebra includes the creation of a "chat" software tool that creates a cognitive and aesthetic map of identities as these develop within the chat world. The software attempts, in iconic and ironic form, to express the qualities of the chat itself and the "feelings" of participants in that discourse. My interests include the design or testing of a number of material cultural expressions that both produce and result from this software as a comparative method. Culturally based performance fields and their associated methodologies (i.e. choreography, dramatic improvisation, fabric and fashion display) can be mobilized to facilitate the exchange and transformation of different forms and sites of knowledge.

I discuss the relationship between direct chat discourse (text), visual patterns, and emotional response, character and identity creation in virtual spaces. The idea of new forms of consciousness is at the core of the popular culture of new media. Agency is expressed as utterance (texts), prosthesis (avatars). Authoring bodies have become discursive, producing subjects who inhabit the net, but only through the acknowledgement of participating communities. The research will examine the ways that contemporary, contingent collectivities and the consciousness attached to these, parallel and differ from collectivities of the past.

We perform daily identities through various roles that vary and are often in multiple positions within our lives. The designers of technologies and the technologies embody the residues of these roles and have embedded expectations of how users will act and how they will be (Kittler, Latour, Bourdieu). While role play is a key element of Code Zebra, the project also make use of abstraction, linking the semantics of dialogue to visualizations that are both beautiful and perhaps meaningful in their own right. What are the semantic threads between the visual abstractions or patterns as these emerge and the source dialogues? What kinds of dialogues are engendered through a generative (organic) process of abstract image creation or through clear role play?.

In order to better understand the ways that actual collectives and collective identities emerge through discourse, I will compare theories of agency. These will include Antonio Gramsci's ideas about hegemony and rupture, Foucault's notions of power and flow, Bruno Latour and John Law's contributions to actor/ network theory. These ideas will be linked to the consideration of the role of aesthetics within the creation process, performance and visualization science of CodeZebra.

Interdisciplinary Trouble: Performing Science in Media Arts

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Abstract

This paper is meant to create trouble in the interdiscipline, to stir up the networks in order to articulate differences, to announce positions, and to argue against easy connectionism in favor of a carefully context sensitive practice.

The title paraphrases Judith Butler's book Gender Trouble, where she points out how gender identities are constructed through every day performances. I am not proposing to discuss the relationship between media arts and scientific disciplines through Butler's work, though perhaps one should pay increasingly attention to how perceptions of what being an artist and a scientist are gendered. Interdisciplinary trouble in my title refers on the one hand to the ways in which new media arts practice often challenges cultural narratives of what it means to perform one's art or one's science, and how this relationship is often also used to legitimize works of art. For instance, does one not invest in the future oriented narratives of nano- and biotechnology, many works by such artists as Eduardo Kac or Stelarc loose large parts of their contextual meaning, and the work approaches technological performance, performing with technology.

It seems that there is a great lack of critique in the seams of disciplines. The act of crossing boundaries from one to another often proves to be more relevant than what comes out of the exchange. The slightly sarcastic word in the title of our panel, Artsciing, arose from a thought that a critical interdisciplinary practice is indeed needed instead of accidental slalom crossing the tracks of art and science. Yet at the same time one must foreground that constructive and often enjoyable interdisciplinary work between new media artists and scientists from different disciplines often leads into new insight for both ends of the spectrum. As a matter of fact, thinking back what I personally found motivating about media art ten years ago was that its status as a discipline had always been troubled, that it allowed a kind of a bastard artist cum researcher environment. There are many genealogical relationships between media art and disciplined histories, but no fixed causal art history or scientific discipline can claim media art to be its sole descendant. In this paper I try to create concepts or rather sketches for the purpose of understanding interdisciplinarity critically.

While in the Unforgiving Memory conference at The Banff Centre last year, I had an interesting exchange with the Brazilian computer scientist Alexandre Moretto Ribeiro, talking about what he means by evolution in computing. The question was phrased, what is the relationship of "evolution" in your discipline with a biological and cultural narrative called evolution? He first said that he had not thought about it, but when asked, it was clear that the phenomena in different domains have very little to do with one another. Evolution in computing is a logical concept, which has a metaphoric, not analogical relationship with bio-cultural narratives. As a cultural critic, one typically does not bother to look at the language of a computer scientist in relation to her or his practice but directly jumps at a computer scientist for making an allegory between computers and biosphere, or between historically narrated evolution and evolutive computing.

What is in common between media arts practice and say computing, is not their metaphoricity, but their use of concepts that are relevant within their own discipline, and which often do not mediate well to non-expert audiences or users. In his essay "Homo Telematicus In The Garden Of A-Life" Roy Ascott, on the contrary, argues that metaphoricity is the combining factor between almost all practices:

"But all is metaphor just the same, recognising that there is no ultimate truth to be found, just layers of transient hypotheses to be constructed or encountered, interspersed with uncertainty. With scientists we share also the understanding that the viewing subject, by choice of the measuring system employed, creates the reality that is perceived, out of that infinity of possible states that all objects of our perception possess."

Here, media arts as a practice is proposed to agree that "we" are behaviourist cognitive subjects, where "our" understanding is more engineered than cultured. The kind of connectionism that Ascott and perhaps the programme of CAIIA as well as the seminar series Consciousness Reframed represent could be called interdisciplinary positivism. By taking a relativistic approach to semantics and politics, Ascott calls for "telenoia", a "disposition of optimism", which "celebrates connectivity and open-ended collaboration". Those who are against connectivism Ascott positions in the category of "endless labour of negation". He also calls for "paranormal and paranatural powers to be re-instated and integrated into the repertoire of human action". So my question is, if Caiia and Consciousness Reframed are about arts and science, what is the science in question? Is it a New Age Cosmology? Why I am extremely concerned about what is done under the title art and science is the probability that at some point few bubbles will burst and give ArtSci a bad name.

When trying to understand why there has been very little open criticism towards CR and CAIIA, it may be that people in the media arts scene have ended up forming conformist networks, which allow powerful figures to avoid criticism. Or perhaps quite a few people consider getting a PhD from CAIIA, because there are only a few programs that give them with such a little effort expected from candidates? This provides another interesting departure: when is it appropriate to talk about artist research as an academic discipline? As an applied area of innovation and development it has been proven to be rather rich, but in terms of theoretical and critical research, where its results would be measured and practitioners provided with degrees, results have been much more mundane. Certificate of artistic investigation and new age exploration could perhaps be a more suitable degree for the CAIIA programme than a PhD, for instance.

In her critique of Sadie Plant, Sarah Kember talks about "anti-politics of connectionism", a critique of theories that "proclaim autonomy of organic and inorganic systems from external, socio-historical forms of control" (Kember 1998, 102). Furthermore she suggests that contagion, alongside with connectionism, coexisted in the phenomenon of computer hackerism in the 1980s, which emerged at a time when biological and computer sciences converged to claim that humans and computers were regarded as information-processing systems suspectible to disease. (Kember 1998, 103) This transition from contagion to connectionism, according to Kember, has taken place via the concept of the cybernetic organism or a cyborg. (Kember 1998, 104) She considers Haraway's account of the cyborg to be most useful and authoritative because of the ways in which it "refigures the terms of knowledge, power and subjectivity" and provides "a productive conflict of its allegiance to science and objectivity and to postmodern theory and the politics of difference." (Kember 1998, 110) Kember agrees with Claudia Springer that popular cyborg images are masculinised and do not live up to Haraway's cyborg, which is genderless, feminist and socialist ideal with a modus opearand of connection, not connectionist.

It is hardly a coincidence that the arts and science discourse has become more visible during the new media hype years, when identity critique and historical research have not been particularly favoured inside nor outside academia. Instead of situated historical contexts, the so called cyber theorists including Ascott, Plant, Negroponte, Rheingold, Stone and many others thrived towards new futurist mythologies avoiding discourse that would relate with artistic or every day uses of new media. Peter Lunenfeld talks about vapour theory, uncritical discourse that is based on imagined futures that have not yet happened. The cyber theorists mix in nostalgia for lost tribal pasts (Ascott), fantasies of on-line subjectivity (Turkle), and other ingredients, which make their discourse not able to stand the light of science nor humanities or social sciences research. In Figural Realism Hayden White proposes that historical writing cannot be collapsed to fiction, because history is tied to particular spaces and times. Similarly, narratives about new media cultures cannot be collapsed into science fictions, cyber poetry, nor "into language of new media", at least not without the consequence of loosing relevance in relation to contemporary society.

Critical interdisciplinarity has the responsibility to deep dive into conceptual and genealogical seams between the disciplines, which both point out how similar language is used in entirely different ways. Often visual artists also deal with theory as if it was material rather than critical knowledge, and humanities researchers spread rhizomatic discourse. As Historiography once borrowed from science methodologies of analysis and description to legitimate its own scientificness, new media art also needs to take any science it approaches seriously, not via metaphoric resemblance, but via understanding profound differences.

As Barbara Maria Stafford has so well demonstrated, new technologies have over centuries excited scientists, jugglers and artists to appeal to different publics using techniques, narratives and rhetoric that seem up-to-date. Like the once great technical wonder object and narrative, a mechanical duck by Vaucanson that was able to mimic eating and shitting does not pass today as interesting nor believable, so it is perhaps time for the cyber discourse paradigm to vaporize. But of course we all make our own choices between performing as jugglers, artists, theory djs, researchers, scientists or as new media culturalists.

This paper is meant to create trouble in the interdiscipline, to stir up the networks in order to articulate differences, to announce positions, and to argue against easy connectionism in favour of a carefully context sensitive practice.

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Chris CSIKSZENTMIHALYI

(no paper available)

Schemas, diagrams and flowcharts by artists, engineers and computer scientists in software based interdisciplinary collaborations

Author: Anne Nigten (Manager V2_Lab[i] Rotterdam, artist, researcher)
With examples and contributions from:
Michael Pinsky, Knowbotic Research, SuMMeR, Eleonore Hellio & Joachim Montessuis

Keywords: schemas, maps, diagrams, art and computer science collaborations, software design, communication tools, interdisciplinary collaboration

Abstract and introduction:

This paper will be part of a *sequence* in which I'll investigate common languages, other then text based, used in interdisciplinary collaborations in the field of soft- and hardware development. Most of my research in the interdisciplinary field has artistic research and development, for which I use the term aRt&D, as the point of premise. The *sequence* I'm working on now includes other chapters investigating storyboarding, and scripting as *expression* for communication in inter- and multidisciplinary collaborations. Soft- and / or hardware based art projects contain, beside the conceptual approach and the content or aimed experience, a development aspect which usually needs to be communicated with team members with a different background. Flowcharts, maps and schemas representing projects turn out to be highly useful in communicating ideas and approaches. I'll think it worthwhile discussing maps, flowcharts and schemas of the concept, and maps on user experiences of soft- / hardware architecture as an important means of communication, not only as an instrument but also to articulate the richness and value of artistic schema's, flowcharts and maps for participatory cultural experiences and awareness.

A known obstacle in collaborations between people from different backgrounds lies in their diverse vocabularies and divergent theoretical contexts. The terminology and linguistic elements are, in most events, domain specific. I've frequently ended up (co-) writing at least two very different descriptions on one single interdisciplinary project; one version for the artistic community and one version for the technical. Besides this, the references to other work or theory needed to position the work, the 'meaning' of words and terminology, are very dissimilar. However, describing the planned work is one thing but communicating the concept to the team members or future team members from other disciplines is often a rather discouraging task. Here the schematic representations have been shown to be highly useful due to their level of abstraction. The abstract representations of soft and hardware systems are more or less compatible with the practical drawings of the artistic concepts, which often accompany the textual concept description of the project. As it turns out, at least in my practice, schemas are more cross disciplinary then text. It seems worthwhile looking into artistic schemas and maps in more detail. Please keep in mind a distinction should be made between levels of detail in schemas and technical drawings (of hard- / software). In this essay I'm referring to so called 'high level' design schemas, diagrams and flowcharts and it's obvious detailed schema's like U.M.L.[ii] or O.D.P.[iii], which are supposed to be translatable directly into code, are harder to understand for non-tech team members as global schemas.

The need for schematic abstractions of our (technical / virtual) environment for communication and overview purposes fits the tradition of flowcharting and technical designs, but also refers to geographic and cartographic representations. We're all familiar with high level [iv]information visualisation [v] like roadmaps and subway maps. When it comes to high level engineering, an example from the pre-digital era is the electricity schema as can be found on the back of the electricity switch box in the do-it-your self store. Applying some simple logic (without requiring an understanding of electrical circuits), it's possible to put

together a small circuit, and connect the appropriate wires without creating a short circuit. Block schemas or electricity charts represent the main elements of most schemas and flowchart methods.
More recent, the fast growth of the web and internet has contributed a commonly understood series of maps. From early web design onwards, designers and technicians needed site maps to communicate the logic of the structure and the menus of the web site and how the web pages and frames or sections relate to each other. Simple site maps show a parallel view of flowcharts, and electricity charts. In static web sites the information flow is easy to follow since internal hyperlinks lead to pre-defined content either as a fixed web page, or in some instances, the request triggers the content of a database to be embedded in the pages / frames. The complexity increases however, when the information of the web or (local area) networked environments is dynamic, especially through user participation or by different options to mine and display the data. Here an interesting phenomena can be observed, since the participant is no longer a consumer, there is a need for a schema or a map which includes the unpredictable but essential user input. V2_Lab has been involved in a range of projects dealing with this approach. For example, in the data cloud projects [vi] the information within a platform for discussion and exchange is displayed as dynamic maps, which can be re-organized after specific themes or interest. In these kind of environments the participant needs to be closer connected to the system if not included in the system architecture design. The system needs to be flexible enough to deal with new and some times unpredictable input.
The maps on this type of software based work not only re-present the software architecture but also the interaction on several levels of newly provided content. Growth is included in the design of the system. The abstract level of (dynamic) maps in this event should provide an overview of the software system, the dynamic GUI [vii] elements, and the data flow to be fed or grown by the participant's actions [viii]. Here it is important to bear in mind most artistic maps do not intend to represent *the* or *a* reality per se, but rather try to emphasize a certain aspect of reality or to communicate the planned experience. This differs from the issues discussed by Martin Dodge[ix] and Rob Kitchin in their superb book 'Mapping Cyberspace' in which they express their dissension regarding the lack of accuracy in maps on infrastructures designed for marketing or commercial purposes [x]. Understandably this must be a thorn in the side of someone with a background in social geography and geographical information systems. The maps reviewed and discussed in Mapping Cyberspace however, do not include the human elements in participatory environments, which is a growing field of interest strongly represented within the artistic community and which I consider more than relevant for a wider field.

In the maps and schemas paper I'll include as examples different views, like concepts, participant experience and / or (technical) design and implementation schemas are combined simultaneously in one overview. Artists and artist/research/engineer groups like Michael Pinsky and Knowbotic Research + CF have worked on mapping the process rather then mapping the system architecture. In this paper these maps will be compared with one part of the system design of the SuMMeR I.C.T.[xi] research project, which is co-developed by V2. The schematic set up for the Mush-room project by Eléonore Hellio and Joachim Montessuis, developed during an artist residency at the V2_Lab. On each project a very brief description is provided to illustrate where the maps and schema's are about. Artistic approaches including aspect as design and semiotics will be discussed in the conclusion of this paper.

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i http://lab.v2.nl www.v2.nl

ii Unified Modeling Language

iii Open Distributed Processing

iv High level in this context refers to the abstract or conceptual level oppostite to low level which provides details of the technological design ref. Also to high level design

v General introduction on information visualisation from a designers perspective; Information graphics innovative solutions in contemporary design, by P. Wildbur and M. Burke, published by Thames & Hudson Ltd , ISBN: 0500280770

vi http://datacloud2.v2.nl http://www.dwhw.nl

vii Graphical User Interface

viii Obviously the shift towards participatory environments brings along more GUI and interaction issues, on which I here wouldn't go into detail in the context of this paper.

ix Martin Dodge is a computer technician, researcher and part-time Ph.D. student at the Centre for Advanced Spatial Analysis (CASA), University College London. He is together with Rob Kitchin author of Mapping Cyberspace (2000) en Atlas of Cyberspace (2001).

x Mapping Cyberspace (M. Dodge and R. Kitchin,published by Routledge, ISBN: 0-415-19884-4); chapter 5, from page 83 onwards

xi Information Communication Technology

GLUE: Case Studies on how Things Stick

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Abstract

GLUE: Case Studies on how Things Stick proposes not so much an academic inquiry in how artists involved in the realm of technology manage to glue together a variety of elements pertaining to their artistic activity. Rather, it is a dip into their everyday reality and practice, which requires one to get one's fingers sticky...

Preamble

Consider the following keywords within a realm where creative practices and technology intertwine: [collaboration] [playfulness] [systems] [knowledge] [research] [theory] [practice] [active participation] [new public contexts] [audience] [environment] [perception] [cohesion] [culture]

All of the notions listed above can either be considered as free-floating entities with their own particular meaning, or they can be re/combined with each other within unconventional contexts, and hence continuously stretch the elasticity of their own semantics. Instead of focusing the discussion on one of the separate topics, this panel will attempt to look at the substance [glue] or action [gluing] that is needed for this collection of concepts to stick together, resulting in a congruent and valuable creative practice. The notion of [orai] will be a starting point for an inquiry into the literacy needed for the cohesion of a vast variety of topics and methodologies employed in the arena of participatory arts. All panellists apply specific kinds of glue to help create instances of cohesion and adhesion within their creative/technological practices, which occur on the cusp of research, production and presentation of artistic works.

Components of tenacity

The intersections of empirical knowledge and critical theory are pondered, cultural research methodologies are examined. Strategies for sustainable collaboration, creative exchange between heterogeneous groups are tested in practice. Collaborative efforts between developers and audience generate new public contexts, where the visitors/participants /players are actively involved in the modelling of responsive environments, networked performances and a range of adaptive systems. Creative output is designed as an incubator for new development, as well as a site for analysis and evaluation of the work process.

Stickiness

The consistency and thickness of the glue varies for the different case studies presented by the panellists. However, we distinguish one indispensable quality for adhesion: play-fullness. From the inquisitive endeavours within research projects, to the output formats of public experiments, to improvement of the group dynamics. Glue your own!

gluing media and matter: txOom

Moderators

Maja Kuzmanovic (B/NL/HR) is an artist-researcher and director of FoAM VZW, an independent, Brussels-based laboratory, an edge-habitat between culture and science, technology and nature, reality and virtuality. She is board member of Foam VZW's sister organisation Stichting FOAM in Amsterdam. FoAM's most recent projects focus on 'mixed reality' applications, such as responsive spaces and wearable architecture. Previously, Maja was an artist in residence at CWI, Dutch National Centre for Mathematics and Computer Science, GMD, German Institute for Information Technology as well as a course designer for Design Technology for the Utrecht School of the Arts. In 1999 she has been elected as one of the Top 100 Young Innovators by MIT 's Technology Review, for her works on non-conventional research and application of several technologies, ranging from Internet to Mixed Reality and fully immersive CAVE environments. Maja holds a Master of Arts in Interactive Media, that she acquired from the University of Portsmouth in 1997.

Nat Muller (NL) holds a BA from Tel-Aviv University (Israel) in English Literature and an MA in Queer and Gender Theory from Sussex University (UK). She has worked as a sex educator, bookshopkeeper and free-lance journalist writing on the subjects of gender, new media and art.. From January 2000 till July 2002 she worked as a project manager and curator at V2_Organisation , Institute for Unstable Media in Rotterdam, and has free-lanced for Axis, Bureau for Gender and the Arts in Amsterdam for which she recently edited the reader Ctrl+Shift Art - Ctrl+Shift Gender: Convergences of New Media, Art and Gender. Nat has published articles in off- and online media, and has given presentations on the subject of media technology, art, and gender (inter)nationally. Currently she is a researcher at the Theory Department of the Jan van Eyck Academy in Maastricht, and founding member of Stichting FoAM in Amsterdam, sister organisation of Foam VZW.

Panellists

Sher Doruff (NL) is a digital artist working in the performative arts. Since 1995 she works solely with real time interactive performance technologies in collaboration with electronic composers, choreographers, interdisciplinary artists and theatermakers. She is currently co-artistic director of the Sensing Presence department of the Society for Old and New Media in Amsterdam and a core team member and initiator of the KeyStroke Project.
URL: http://www.keyworx.org http://www.waag.org

Sharon Daniel (USA) is an artist who is developing and exploiting new information and communications technologies for the design of "Collaborative Systems," systems in which participants are given a framework for building a database based on their own experiences and the tools for structuring and interpreting that data themselves. Daniel's work has evolved from interactive sculpture and video installation to experimental research that re-casts networked, virtual environments as public, community and collaborative sites. `
URL : http://arts.ucsc.edu/sdaniel

Sha Xin Wei (USA) was trained in mathematics at Harvard and Stanford Universities, working over a decade in scientific simulation, visualization and experimental multimedia. After obtaining an interdisciplinary Ph.D. at Stanford on differential geometric performance and writing technologies, Sha joined the faculty of the School of Literature, Communication and Culture at Georgia Tech in Atlanta, USA. Sha established the Topological Media Lab to study gesture and media from phenomenological as well as computational perspectives. He now conducts research on computational media and responsive media spaces, and on how scientists, artists and technologists can collaborate to produce knowledge and cultural artefacts.
URL: http://titanium.lcc.gatech.edu/topologicalmedia
http://lcc.gatech.edu/~xinwei

Michelle Teran (CDN) is an artist and workshop facilitator whose practice involves live performance/installations using technologies that address issues such as social networks, presence and the interplay between (media) spaces. Her work covers live installations, online performances, tele-presence, live art, video, networked collaboration, lab spaces, art and social play. These works have been presented in public spaces, conferences, festivals, galleries, clubs and theatre spaces. Her recent projects include: LiveForm:Telekinetics (InterAccess, Toronto), Hot Wired Live Art: Airwaves, (Banff Centre for the Arts), The Playgirls (Axis, Amsterdam), AFK, Stereotactic (Mercer Union, Toronto) and O+E (NEMO, Amsterdam and AudioRom, London). Currently she is artist-in-residence at Waag Society for Old and New Media in Amsterdam.
URL: http://ubermatic.org/misha/

Guy Van Belle (B/NL) has been prominently involved in the use and development of multimedia for artistic purposes since 1990. He is working as an educator and mediatechnologist at the electronic music studios IPEM (Ghent University,B) and at the medialab at the Higher Institute of Fine Arts Antwerp (B). As an independent art-director he cooperates with De Waag/Keyworx Amsterdam on the development of collaborative creative tools and installations. He initiated no-sinc.org, an experimental computer band for youngsters. Since 2000 he has been working under the name of the collective digital band mxHz.org (machine cent'red humanz).
URL: http://www.ipem.rug.ac.be/gvnbelle/index2.html
http://www.mxHz.org

Christiane Dellbrügge and **Ralph de Moll** (D) studied both at the Academy for Visual Arts in Karlsruhe (D) and have been collaborating since 1984. Their work focuses on questions of reception, presentation and evaluation of art. It analyses the conditions, which are constitutive for art, including their own role as artists. They respond to challenges searching for the adequate media and methods for each specific situation.
URL: http://www.demodell.de

Amanda Steggell (NO/GB) completed her dance education at London College of Dance and Drama, and studied choreography at the Norwegian Ballet Academy, Oslo. Co-director of Motherboard - a cross-disciplinary artist group working with performance and installation - since 1995. She has choreographed several works for the stage and screen ,and worked as guest teacher at institutions of visual and performing art.
URL: http://www.notam02.no/motherboard/1.html

Per Platou (NO) studied media theory, criminology, history of ideas and film/drama in Oslo and London. Background in alternative media, mainly F.EKS magazine (90-97) and Radio Nova (84-93). He founded DBUT in 1989, an alternative distribution network, record company and production company for sound, film, art and media. In 1995 he started NOOD, a project dedicated to sound exchange on the internet, has since then directed and produced a number of sound/art works and workshops. Freelance journalist on digital art and hacktivism, and board member of the Norwegian Short Film Festival and UKS.
URL: http://www.liveart.org http://www.notam02.no/nood/

Embodiment: meat and machines

Nina Czegledy, Canada/Hungary, Co-cordinator
Sarah Waterson, University of Western Sydney, Australia, Co-cordinator
Kaoru Motomiya, Japan
Melinda Rackham, College of Fine Arts , University of NSW, Australia
Lehan Ramsay, Japan
Josephine Starrs, Sydney College of the Arts, University of Sydney, Australia

Abstract

"We are all dislocated organs in a mapped symbolic state open to operation open to social and philosophic interpretation and reading. We are already mapped we are constantly written to we are informed we are reproduced in our most predictable and deducible form. Technology and the art of button switch manipulation proved this and requires recruits. We are constantly studying techno operation with the commitment and unthinking/unquestioning/uncreative mandatory read only drive of the ALU. Sometimes we make mistakes." Waterson 1990

Over the past decade the human body has become a key site of investigation. Contrary to early predictions and fears as cyberculture(s) unfolds the focus has increasingly centred on the biological body and embodiment. Gender issues remain on the agenda of artistic explorations. There is no such thing as a neutral body. This panel presented by an international interdisciplinary group of women artists explores the gendered body within new media practice. [1]

Body Encoded
Nina Czegledy

In the process of encoding (and decoding) the human body, previous traditional associations have shifted resulting in a frequent loss of individual identity. It is widely recognized that particular technologies are capable of drawing together biological and non-biological materials in an often seamless flow, creating a hybrid cybernetic system in the process. In view of these developments, how do we define the boundaries between the source (the biological body) and the encoded in-organic data. How does the abstracted, encoded information on the human body influence our daily life our singularity? On the one hand the rapid development of technologies has led to certain improvements in the standard of our (Western, industrialized) every day existence, concurrently the technological advances have foregrounded philosophical considerations regarding the relationship between the biological body and machine/technology. The often argued but perhaps best known scientific example of transcoding (the transmission of the encapsulated information across hybrid media) is genomic profiling including the extensive data base of the Human Genome Project. The question remains whether the thorough documentation of the body -even if it eradicates disease- will improve the human condition. There is also the very real risk that the information in a given database may be used for unanticipated, unintended, and possibly illegal, purposes. In the intricate loop between man/machine encoding (disembodiment) is only the first link in the chain, a prelude to further events.

The view of the invisible
Kaoru Motomiya

I have been taking up body-experience in my art works, using modern technologies. The perception and conception of human body have been discussed in science history and recent technological environments, including electronic arts. Various and innumerous phenomena are proceeding under our skin. The modern technologies, from X-ray technique down, made possible to visualize the phenomena under the skin, which were invisible before. Fetus had been convinced by perception inside of woman's body in longer time. It was visualized by ultrasonic waves in recent years and became an image on the monitor which to be seen as babies by mothers at the first time, but not real substance. The development of computerized axial tomography or CT scan is considered to be an extension of western scientific ideology, such as once anatomical practice had known human body by dissection into the subdivided parts and given them the names. Reacting to such an ideology as "what can be seen is what can be understood, possessed," works in the 1980's appeared gazing the hyper-visualised culture with a critical eye in new art history and science history. Scientific exploration reached even to mental phenomenon (the symptoms of a woman in hysteria was visualized with the photographs and illustrations). In the 90's, decoding a human body into a text became a new argument, which can be titled gender science history. At the present time, one hundred years after the first cosmetic surgery in 1898, the commercial aesthetic industries are accelerating social distortions such as anorexia and overeating. Today's human is living in the technological society which allowed us to exchange even the own race or gender as a code that can be removed, in the progressive form (an obvious example that goes without saying is the transformation of Michael Jackson). The human body is transforming from its original, fundamental factors, and metamorphosing into a homeless, culturally hybridised subject.

[1] From *Mapping e~motion - bodies, reading, interactivity and slipping through the gaps*, Sarah Waterson, University of Western Sydney, 2002, Embodiment Panel Co-ordinator

Soft Skinned Species
Melinda Rackham

As avatars communicating in online Multi-user environments we exist both internally and externally to ourselves, operating simultaneously in hard world spaces and virtual soft electronically constructed spaces – so that while the body is seemingly dislocated, it is also physically gendered, located, grounded, present, somewhere. The physiological and cognitive processes still reside within the fixed subject, the localized self. We are not absent - but like the womb, the matrix, and the void, we are at once empty while containing all possibilities. Online we define ourselves in a hybridised way, as shifting nodes of communication, congruently self and other, alone and networked.

Inside virtual environments, like my VRML world *empyrean*[2], familiar notions of neutered disembodiment or stereotypical embodiment are inverted as users interact as fleshy energetic avatars both through text, and via sound and gesture. Being publicly bodied online in networked hardspaces our electronic non-localised connection with others differs slightly from pre-existing embodied relations. Networks are mostly accessed from the comfort of our domestic private spaces - living rooms, studies, from the laptop as we are snuggled up in bed; suggest a virtual space which feels like a safe private intimate feminine sphere. It invites us, with the promise of intimacy and an essential feeling of safety, to stretch our self, our physical and emotional and cognitive space, over a worldwide network.

Saturated with networked intimacy, in the privacy of our own homes, we feel immune to the penetration of the other, we feel in control through the keyboard. However these physical boundaries, this concrete located self-definition, does not function when the self is stretched over many nodes, along many lines in a global network. Avatar bodies do encompass, consume and ingest others in amorphous space, where every communication changes the virtual and physical self. Unlocatedness becomes familiar as we learn strategies of shifting definition in virtual materiality - to re-define ourselves including or excluding other matter. This multiple presence our virtual self, redefines its boundaries, as fluid machine produced selves do not survive without their skin.

There is no such thing as interesting programming.
Lehan Ramsay

Why can't I learn programming? I don't know if it's because I'm a girl or an artist or just dumb. Or maybe it's because I'm not good at delayed gratification. Whatever it is, I don't seem to be able to learn. Neither encouragement nor shame can budge me from my ignorance.

Why do I need to learn programming anyway? I don't LIKE programming. It's obscure to me, and frustratingly dry, and I don't like to have to spend hours looking at a wall of tiny symbols which together refuse to makesomething unless they're ALL correct. All the software in the world out there.....surely that should be enough. Do I have to be cutting edge?

Isn't EVERYBODY cutting edge?

Do you know what it feels like for a girl in virtual worlds?
Josephine Starrs

In games we can play with ideas of subjectivity through body options, weapons, various forms of representation and interaction with imaginary spaces. Gameplay, especially on the internet enables us to indulge in multiple personalities and explore strange shifts in our own subjectivity. However, the experience is still grounded in real life physical bodies sitting at terminals or fingering the cell phone in real space. Although gender bending in a disembodied space seems to create new paradigms outside patriarchal social structures, the physical body is still the most important political site for women.

As part of the early nineties cyberfeminist group VNS Matrix, our impetus was to investigate and decipher the narratives of domination and control which surround high technological culture and explore the construction of social space, identity and sexuality in cyberspace. In 1996 VNS Matrix made the gamegirl prototype "Bad Code", with female heroines and girl characters with attitude. Statistics tell us that female participation in game culture has significantly increased, especially since more games are now played in the home and girls are playing their brother's games if not their own. So where is the debate about representation of women in computer games at now?

[2] Available http://www.subtle.net/empyrean

The Interpresence Project

Artur MATUCK

(no paper available)

CTHEORY MULTIMEDIA:
Wired Ruins/ Digital Terror and Ethnic Paranoia

CTHEORY Multimedia Co-Curators:
Timothy Murray, Cornell University
Arthur and Marilouise Kroker, CTHEORY, Concordia University

Abstract

In response to the global promise of and challenge to the expression of ethnic identity via digital means, the biannual electronic journal, CTHEORY Multimedia (http://ctheorymultimedia.cornell.edu), is about to publish a special issue of internet art dedicated to the theme of "Wired Ruins: Digital Terror and Ethnic Paranoia.

"Wired Ruins" reflects on the digital and viral networks of ethnic identities that now so urgently emit faint signals for recognition among the overlapping diffusions of cultural angst and digital terror. A vibrantly pulsating network resisting the repression of the new age of censorship, "Wired Ruins" is a simulacrum of cross-cultural infection and cross-border fluidity.

Reacting to the complex horrors of terrorism while resisting the surveillance regimes of the disciplinary state, its practitioners work passionately to reposition the code in counter-response to the aggressive parasites of religious fanaticism and ethnic paranoia. "Wired Ruins" will haunt the future as the skeletal archive of the many unrecorded artistic responses to digital terror and ethnic paranoia.

The global media events of September 11, 2001, prompted the co-curators, Arthur & Marilouise Kroker and Timothy Murray, to invite contributions that would extend representation of ethnicity to its framing in the context of digital terror and paranoia. The panel will present the contents of the issue (roughly 15 works of art) while framing it theoretically and contextually. Our aim will be to introduce ISEA participants to artistic reflections not only on the terrorist attacks against the World Trade Center in New York City but also on cross-cultural terror and paranoia as it occurs across global points of artistic intersection: Israel and Palestine, Lebanon and Switzerland, Soweto and New York. In so doing, we will reflect on the contributions made by the artworks and their conceptual presentation in the journal to the understanding of terror in the digital age. Responding to more than the lingering residue of bent steel and disrupted economies, "Wired Ruins" invites its users to mix the psychic bytes and artistic interventions of its three interactive, databases for critical reordering and creative reconfiguration: "Digital Terror: Ghosting 9-11," "Ethnic Paranoia, before and beyond," and "Rewiring the Ruins."

Wired Ruins

"Wired Ruins" reflects on the digital and viral networks of ethnic identities that now so urgently emit faint signals for recognition among the overlapping diffusions of cultural angst and digital terror. A vibrantly pulsating network resisting the repression of the new age of censorship, "Wired Ruins" is a simulacrum of cross-cultural infection and cross-border fluidity. Reacting to the complex horrors of terrorism while resisting the surveillance regimes of the disciplinary state, its practitioners work passionately to reposition the power of the code in counter-response to the aggressive parasites of religious fanaticism and ethnic paranoia. "Wired Ruins" will haunt the future as the skeletal archive of the many unrecorded artistic responses to digital terror and ethnic paranoia.

In the end, power only responds to challenges to its survival. An equivalence of challenge and counter-challenge. And so, to the challenge of viral terrorism, the state immediately adopts the language of viral power. Power grafts itself onto the psychological terrain of anxiety and fear. Circulating in the deepest streams of popular culture, viral power puts everyone on alert for the terrorist within. This psycho-geography of digital terrorism and ethnic paranoia is, of course, the beginning-point for the artistic imagination. As ever, art exists as the hallucinatory force that says 'no' to both viral power and viral terrorism.

In dialogue with the charged memory fabric of the ghostings of 9-11, a blend of melancholic loss, unprecedented digital tracking, and relentless military aggression, this issue rewires the ruins of digital terror. It acknowledges the intensity of confused, passionate responses to loss and fright whose complex roots lie in the charged historical dynamics of ethnic paranoia in the late twentieth-century, the flippantly hegemonic discourse of commodity culture, and their ambivalent imprint burned into the digital fabric of artistic new media. 'Wired Ruins" calls artistically for critical reflection on the intersecting systems of transmission so crucial to the refiguration of ethnic and international understanding: information systems, immigration systems, legal systems, cultural systems, artistic systems, digital systems and their counterterroristic rewirings. As a sort of guerilla tactic, CTHEORY Multimedia fills the screen with a spectral mix of bootlegged fragments of truth, fiction, and reconciliation.

Digital Terror: Ghosting 9-11

A body invader, digital terror slipstreams through the imaginary territories of information, culture and human interface. A cooptive machinery of translation and repression, it smothers the complexities of human culture with the hegemony of technological force and the mindlessness of media sound bytes. It deadens the psychic resonance of grief, melancholia, and passion with the rational despotism of surveillance and subjection. It terrorizes computational creativity with military might. Artistic responses to digital terror as ghostings of 9-11 reveal the wired veins of a complex system of call and response, one acknowledging the horrors of world events while aligning them with the psychic residue of personal uncertainty and the cultural enigma of invaded hosts and viral parasites. We are trapped in a media culture of time lag: an endless repetition of those jarring media tracks broadcast in iconic digital loops since the morning of 9-11. Digital ghostings here lend critical texture rupturing the seamless surface of digital terror. An art that counters the repetitions of the image system with specters of human memory.

Ethnic Paranoia, before and beyond

Outward projections of conflicting desires and rejected ideals, the certitude of being watched and tracked, ultimately the frightening resonance of horrific visual hallucinations and the cacophony of foreign sounds overwhelming the subject. What was typical of chronic paranoia for Freud and emblematic of the alienated core of subjectivity for Lacan has burgeoned at the outset of a new century into a high tech, global fantasy of ethnic paranoia. The spectral threat of ethnic aggression displaces the split of the self-torn national subject whose founding projections of interiorized torment become realized from without by comet-like specters of planes hurtling through space and cinematic loops of architectural monuments suddenly evaporating into ghastly force fields of dust and ash. The spectral ghosts, goblins, and devils haunting classical culture now become circulating particles of the remnants of massive corporeal loss whose diversity of hue, color, and accent accrue the hallucinatory stature of a national ideal in the face of an externalized, ethnic other, a distinctly evil force traversing the axes of frontiers and borders.

Hostility to the ethnic object from without lends comfort to the precarious subject from within, just as ethnic paranoia puts the self-centered citizenry on alert for the terrorist within. How readily the threatened national self gives over to surveillance and censorship from within, embracing the imagined comfort of the systematic restriction of cultural miscegenation. Now, just as before, excessive censorial pressure is placed directly on the viral points of transmission: immigration, communication, transportation, imagination, and hallucination. In response to the internalized threat of viral terrorism comes an artistic appeal for critical interventions in the intersecting systems of transmission so essential to the refiguration of ethnic and global comprehension.

Rewiring the Ruins

Through virtually simultaneous communication and global reception, the ruins of terror are rewired, rerouted into the network of media transmission and corporate profit. Electronic recordings of immensely sad adieus intermingle with sound bytes of political invective framed by the gracefully silent, yet ever-present, banners of media identity and advertisement. Now on the net, there is always the invitation to replay the crime, to relive the horror, as slowed down for proper media immersion by the delay of digital compression and editing. How quickly global media ventures work to monopolize the internet, to reconfigure local particularity into global universalism, and to translate the nuances of vibrant political and cultural specificity into the numbness of warped viral terror.

But viral terror is itself subject to the aggressive return of disruptive viruses, commercial parodies, and even artistic clones. Wireless guerilla communications, superstitious appliances, pixelized media surfaces, and internet snapshots work to resist and bypass the cynical uniformity of global media. Viral parody is the life form of rewired ruins.

By rewiring the ruins, digital and viral networks of ethnic and political identities here urgently emit artistic signals for recognition in the wake of programmatic diffusions of cultural angst and digital terror. A vibrantly pulsating network of digital play and possibility presents itself to haunt the certainty of the defensive return of digital terror.

Panel Discussion : Is Digital Art Contemporary ?

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Abstract

Digital Art is currently considered as marginal in the well-established world of contemporary art with its numerous institutional museums and the global circuit of the biennale exhibitions. We will try in this panel discussion to initiate a dialogue between both communities (the "digital" one and the "contemporary" one) and see how those issues are handled by curators of newly established or future museums.

1. Theme

There is currently two art worlds between which communication is not easy : the digital art world and the contemporary art world. Digital art is represented is newly build special-purpose museums such as ZKM, ICC or regular conferences/exhibitions such as ISEA, Ars Electronica or Siggraph but is rather rare, not to say totally absent, in the institutional Museums devoted to contemporary art (in the U.S., in Europe or in Japan) and in the now numerous Biennale around the world (Venice, Lyon, Kwangju, Sao Paolo, Shanghai). It seems however that the situation is somehow evolving as in the last year a few major "new media" exhibitions have been held in contemporary art museums : *Art in the Age of Technologies* at the San Francisco Museum of Modern Art, *BitStreams* at the Whitney Museum in New York and the *video games* topic of the Biennale of Lyon in France. Moreover this year in Madrid at ARCO2002, the Spanish contemporary art fair, two panel discussions on "art and new medias" were held in an attempt to open the (classical) contempory art audience to digital art during the week-long conference program on various aspects of contemporary art (oriented towards curators, art dealers and critics) which is co-located with the art fair.

In this panel discussion we would like to open the dialogue between people from the "classical" contemporary art world and people in digital art and to investigate why is it so difficult for established and prestigious art institutions to accommodate some room for digital art (to such an extend that digital art had to create its own venues in the late 90's : ZKM, ICC, etc). Is it only a question of technology or a broader discrepancy in the artistic content ? Contemporay art waved farewell to representation and images several decades ago, while digital art is often based on visual sensations (e.g. virtual artworks in CAVE devices, etc).
Could we bridge up this gap ?

Answering this question becomes a necessity as, firstly, new media museums are facing funding problems and, secondly, new contemporary art museum are opening in various places and the hegemony of technology in our daily society makes it likely to also invade the museums soon.

In our so-called post-modern society, "new technologies" such as computers and telecommunications are still young and hype despite the fact that they are now more than fifty years old and could thus hardly be categorized as "cutting-edge" per se. However, computers and digital technologies made it possible to realize some innovative devices that could reify genuinely new concepts and novel artwork/spectator relationships.
In the field of digital arts, the concept of interaction has repeatedly been identified as a fundamental characteristic and this notion is one of the fundamental advances brought by the use of computers in art installations. In the paradigm of the interface, interaction has often been considered as a necessarily reduced and incomplete dialogue between the human and the machine, as a means of access that will always be frustrating since it is imperfectly codified according to the digital reality hidden at the core of the machine, in the shadow of memory banks and over-clocked chips. This is because the computer is still thought of as a simple repository of binary information, a database in which the phenomenon of interaction is reduced to a question of more or less easy and more or less efficient access to data. This vision is all the more applicable to one of the latest developments in new media, the World Wide Web, the rhizomatic reification of a nearly infinite library of Babel. In taking up this route, numerous artists have done their utmost to devise interfaces that are more or less natural to allow for an improved interaction with their digital works, as if the viewer's immersion should necessarily go through a complex technological apparatus with computer or electronic elements facilitating the difficulty and ambiguity of interpretation that all artistic production offers. That approach, however, forgets that immersion is cognitive before being perceptive, the "reality" of a work clearly being invented and recreated by the viewer/spectator and not just perceived and undergone. Thus the artistic content will always be more powerful that the latest immersive display or graphical hardware to invite the spectator to enter, explore and loose himself in the computer-generated realms of digital artworks.

2. Participants

This panel will be a follow up to the panel on the same topic organized at ISEA 2000 in Paris (also organized by Philippe Codognet), which gave rise to a lively response from the symposium audience, showing therefore in an obvious manner that this problem was crucial and somehow “tabu” in the digital art community.
To answer these questions, the panel will feature art theoreticans, in order to state the context of the debate, and museum and independent exhibition curators from new venues in Japan, Europe and the United States.

Decontamination, Surveillance and Ready Made Martial Law in the Anthrax Age

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Abstract

We propose a panel discussion on surveillance versus sousveillance and critiques of both of these opposing viewpoints by artists, scientists, theoreticians and inventors in the wake of global terrorism, media frenzy and government witch-hunting. We propose elucidating both the reality of terror as well as the fabrication of its reality and all technologies that assist these processes. We will present strategies and preliminary responses to current surveillance issues and proposals, especially as they relate to surveillance in the Anthrax Age (mass decontamination, large-scale information collection, population control, quarantine, triage biometrics and mandatory medicinal control). The following submission reflects three reactions to this situation.

1 Background: Decontamination and Martial Law in the Anthrax Age[1]

The threat of terrorism has made Martial Law seem acceptable to many. Thus in the event of a suspected release of a nuclear, chemical, or biological agent, the area, city, state, or the like, of the release, may be cordoned off to prevent victims, patients, suspects, or others who may be potentially contaminated from leaving the scene of the release without first undergoing decontamination.

Additionally, new kinds of decon facilities are being researched, and invented, as described in Canadian Patent 2303611 (anthrax-ready mailroom exhibit at Gallery TPW, July 2001, http://wearcam.org/bradecon.htm). Methods of statewide emergency evacuation by the armed forces are also well known in the prior art. For example, the Model Emergency Health Powers Act allows for entire cities to be cordoned off, in the event of a suspected possibility of a smallpox outbreak, or the like.

From fire extinguishers to riot extinguishers (big cans of pepper spray), the need for crowd control has been marketed as a new social order. And with fire hoses for crowd control the need for the fireman has changed from controlling fire to controlling people. Is he the firefighter cum people fighter? Or has his desire to control fire merely evolved into a desire to control people? [S. Freud, The acquisition of power over fire., Int. J. Psychoanal., 13: 405-410.]

> hose people down both to decontaminate them and to discourage them from leaving the area. ... victims would be given Tyvek suits, spare clothing, or even garbage bags to wear... dozens of people could be herded through decontamination lines simultaneously.[2]

And with that desire for dominance over people, comes the need for surveillance, to document the stripping and scrubbing of his subjects:

> The identification of contaminated victims and their personal effects... Victims are also videotaped as they proceed through the decontamination line.[2]

This being done in a mechanized and very efficient way:

> The disinfection/decontamination process is akin to "putting humans through a car wash" after first destroying their garments. Los Angeles World Airports have put in place a contingency plan to disinfect up to 10,000 persons who might have been exposed to biological or chemical substances.[2]

Decontamination centers at secret locations, with the ability to run people through a central intake facility, are also known in the art:

> The city has taken steps to establish decontamination centers at various undisclosed locations, he said. "The equipment is in place. ... "We have to be able to shut down the hospital, filter people through a central intake where we can shower and wash them down,"[2]

Intelligence-gathering systems, means of controlling large numbers of people, etc., can also be applied to the management of a large-scale involuntary labour force. Means and apparatus for compelling civilians to perform mandatory work is well known in the art:

> Other outstanding legal questions concern the ability to isolate, quarantine, or detain groups

[1] These issues were previously explored by S. Mann. (Exhibit Curated by Kathleen Pirrie Adams, http://www.wearcam.org/dusting/tpw/ with help of James Fung, Sharon and Corey Manders, Felix Tang, Betty Lo, Chris Aimone, and Thomas Hirmer.)

[2] See summary of government and industry documents on decon: http://wearcam.org/decon summary.htm

or individuals; the ability to mandate treatment or mandate work; restrictions on travel and trade; the authority to seize community or private property such as hospitals, utilities, medicines, or vehicles; or the ability to compel production of certain goods[3].

We now live in an era in which one spilled salt shaker can bring about Martial Law and strip hundreds of citizens of their civil rights, leaving us stripped naked, bleached, and bagged. The disinfection/decontamination process is akin to "putting humans through a car wash" after first destroying their garments. Los Angeles World Airports have put in place a contingency plan to disinfect up to 10,000 persons who might have been exposed to biological or chemical substances. Since a suspected terrorist incident constitutes a crime scene, all clothing removed from victims will be evidence. This means the clothing needs to be bagged, tagged for later victim identification (like triage tags) and set aside in a secure location until the Federal Bureau of Investigation (FBI) determines its disposition.

Here are some detailed examples of strategies each of the panelists will use in addressing the Anthrax Age theme:

2 Wearable Computing as a framework for Reflectionist Intervention (S. Mann)[4]

Reflectionism is a memesis/nemesis that holds a mirror up to society through the creation of a symmetry built from poetic justice. From the cyborg manifestations that mirror nature's own "human elements" to the conspicuously concealed wearable security cameras (http://existech.com/domewear/) worn by customers shopping in large department store complexes, Reflectionist art(ifacts), performances, and street theatre (http://wearcam.org/adwear/) will be presented in the context of post-anthrax societal values.

A series of performances have been constructed to explore issues of sousveillance[5] in the surveillance age.

Computational clothing is perhaps the anti-thesis of mass decontamination (stripdown), and it is the computational clothing that makes the cyborg, as an element if individual performance space.

In one performance, text, graphics, and other content containing images from the hidden camera are integrated on-the-fly and rendered to the data projector for the audience. Provocative text messages such as "ADVERTISING IS THEFT of solitude" are mixed with video from the concealed night vision camera system (See Fig 1.).

Figure 1: The wearable apparatus contains a 1 GHz P3 CPU, rendering engine, high-power mercury vapour arc lamp data projector, within a black flame-retardant Nomex (TM) uniform custom tailored to fit the wearer. Here a person can see his own image together with other computer generated material.

Challenging the notion of surveillance, along with role reversal (surveillance versus sousveillance), gives rise to a reversal of performer versus audience. Passers-by became street performers and artists on the wearable stage that reflects their images to them. The stage itself, ordinarily thought of as a piece of architecture, has become a piece of clothing. Of course, the ability to play with or walk away from the situation and not participate mitigates the invasiveness of the sur/sous/coveillance.

3 Biometrics, Identity Validation, Data Flavoring and The Keeper of Keys (M. Böhlen)

Computing systems are cultural artifacts. They are conceived in and based on very strict and limited notions of what reality is and how to represent it. Devising systems that practically address the limitations and skewed assumptions built into computing systems and their practical applications, in particular where socially sensitive, biometric data is collected, managed and interpreted, is a form of cultural engagement.

With advances in imaging technologies and classification techniques, biometrics and bioinformatics promises accurate and universal identification. Uniqueness of

[3]Testimony of Margaret A. Hamburg, M.D. Subcommittee on National Security, Veterans Affairs And International Relations Committee on Government Reform July 23, 2001

[4]supported in part by the Canada Council for the Arts, with James Fung, Sharon and Corey Manders, Felix Tang, Betty Lo, Chris Aimone, Thomas Hirmer, Angela Garabet, Adwait Kulkarni, and Samir Parikh

[5]"Sousveillance" (inverse surveillance, from the French word "sous", meaning below, and "veiller", meaning to watch) is an attempt to balance the one-sided totalitarian nature of organizational surveillance.

record is the key upon which biometric based identification and verification are built. The lure of the perfect solution by flawless identification can phase shift the consequences of potential error into insignificance or collateral social damage. But flawless technologies do not exist. Even the best and most elaborate biometric systems work with margins of error. Moreover, the convenience of electronic mass storage makes no distinction between a casually collected data entry and a permanent record. Who owns a routinely collected finger scan whose electronic permanence can exceed the time frame of its human originator? Why is the iris scan, used to ensure one's immediate credentials, silently stored beyond its use with no expiration date? And finally: Which forms of beauty can be construed of this unclaimed data?

Technologies that become prevalent create in the wake of their realization new ideas and values. This process is ooccupied by issues of power and politics, usually to the exclusion of any other topic. It need not be so. Image processing, for example, can be used to identify suspects captured on video. However, image processing algorithms not linked to a database or cross-referenced for suspect search have a neutral flavor. Removing external linkage from surveillance technologies by feeding all data in closed loop form back into the system changes obtrusive surveillance to observation, to a keen and attentive gaze. In a similar way, one can reclaim the territory of biometric validation and identification for non utilitarian temporary poetic purposes.

3.1 The Keeper of Keys

The Keeper of Keys (KK) is an access granting machine and data management system that utilizes finger scanning and pattern matching techniques to access a person's presumed right to enter a restricted site [6] Of all biometric validation techniques, finger print classification is the most established and entrenched in law enforcement through out the world. New imaging technologies replace the fingerprint with the digital finger scan, and use computational similarity measures to match one scan to another. KK makes use of this technical knowledge and differs in its interpretation of it. KK has a defined policy of data acquisition and retention, a particular conception of biometric based uniqueness and works within the laws of data classification within system inherent limitations.

KK has a vending machine style presence (Fig. 2). Appearing as a large box, a single large screen is display and interface. An industry grade commercial finger scanner[7] is integrated into the front, between a set of speakers to the left and right. A computer, a data projector and a set of mirrors redirecting the data are housed within the apparatus.

KK is a doubled system. It operates in different modes at different times. During normal business hours KK acts as a functional and reliable gatekeeper to an area of restricted access. It employs the standard biometric validation scheme of data acquisition, feature extraction, feature comparison and classification. The scanner is a capacitive imaging device that can capture a high-resolution image of a fingerprint from a hand desiring access to a given site. The minutiae points, essential features traditionally understood to uniquely characterize each and every finger, are extracted from the image. The minutiae template is then compared with those of reference finger scans previously accepted by KK.

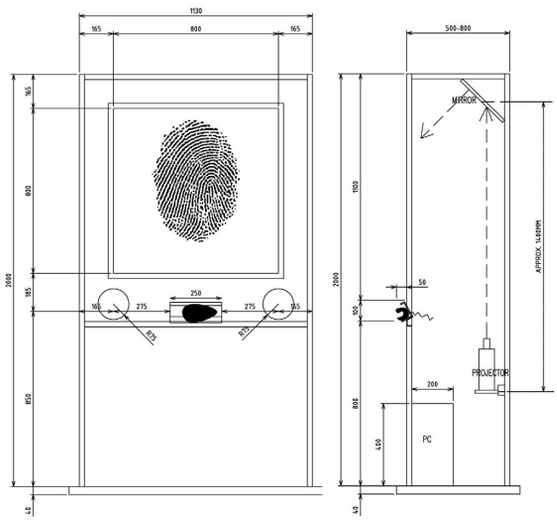

Figure 2: Schematic of KK

Based on the result from the minutiae feature matching algorithm, access is granted or denied. Informed of the theoretical possibility of erroneous classification, the system varies the probabilistic strictness of its matching criteria and makes this known to the onlooker. KK can celebrate its data and hint to the user that a different data management philosophy can exist. To the utilitarian daytime construction of KK, false rejects are as undesirable as false accepts. As in all standard biometric validation procedures, reducing the possibility of false rejects increases the chance of false accepts (and vice versa). Potential instances of either category are placed in a temporary repository.

After hours, KK manages its temporary record sets per default according to different rules. It gives the collected data autonomy and group identities based on the results collected throughout the day. At night, KK massages the ambiguous potential of the day's scan work. One can think of this as a kind of artificial flavoring for data, data flavoring. Diligent and meaningful enhancements can make insipid raw data interesting. This is a return value the system gives to those who engage it. Images of poor quality scans can slide across the screen in search of like categories. Images of rejected entries are boxed into corners and asked to expire, but may refuse to do so. Over time, the rejects visually evaporate or fossilize into the domain of deleted data. There is no design for storing image material for over one day. Data misuse is prevented on the design level.

At times, the finger scans are passed to the SightSinger.

[6]This work is being realized with J.T. Rinker, Ph.D. student in the Music Department, SUNY Buffalo.

[7]This project is supported in part by Ethentica Corp.

This module composes from rejected finger scans audio artifacts. The algorithm designed to perform this operation extracts salient image points from the scans and maps this information to audible frequencies in the time domain according to the KK's compositional preferences. The fingerprints thus become characteristic audio artifacts.

KK is a functional machine designed to re-imagine, beyond the confines of security and repression, notions of machinic identity control and biometric validation. It is a granter of access, a transformer, enhancer and a destruction mechanism for sensitive data for the age of large-scale information collection and population control, expanding the notion of what computing systems can be used for.

4 Intimate Technologies and the War Zone (S. Diamond)

AGENT ORANGE/ORANGE AGENCY

The Fashion of Statelessness, War and Responsibility in the Mobile Era

President Bush, please tell me, "Is Orange the Colour of EVIL?" How do we understand the colour orange, a secondary colour, and hence a result of effects, in relation to the problem of agency, of visibility and invisibility, of belonging and not belonging? How can we connect wearable technologies, the mobility of fashion as style, the desire to subtly wear communications on our sleeve or on our bodies with an era of localized warfare, globalization and the reordering of identities? The technologies of the self are core to war.

Can you shake the images of ElQueda prisoners held in the hot cages of Guantanamo by the US military? Stripped of cultural representations, dressed in vibrant neon orange, these men both live out and symbolize the loss of state protection, a spiral into the virtuality of the global political vortex. They are not the only prisoners who wear orange. In Canada, you can see the mostly Aboriginal prison population toiling at the side of the highway in work gangs, wearing flame coloured orange coveralls. They too were systematically stripped of cultural expression that includes spiritual as well as linguistic identity, ideology and ethics. They too were stripped of nation status. They have resisted. Is the era of ubiquity a return to feudalism, for some? (See Jamie King, MUTE's articles on statelessness).

What does it mean that fundamental rights that date back to the bourgeois revolution are suspended?

A friend of mine, Shawn Singer, enters the office where I am writing. He is a beautiful man; a traditional dancer and now a fashion designer whose cultural background is Blackfoot and African-Canadian. He is wearing an orange shirt with a bead collar that he has created. We talk about orange. He endorses its amplifying effect, the sense of presence, the absolute quality of the colour even if it is a mix of yellow and red. Locate expressiveness against Orange, the UK communications company that patented a colour. Orange. Global trademark of ubiquity. http://www.orange.co.uk/register/register.html

Orange has its history as a colour of modern war. Vietnam was a war that Americans needed to make invisible once it had ended. Agent Orange, actual chemical warfare, impeded this; these weapons of mass destruction indicated the vulnerability of American troops. Remember VietNam? Remember Agent Orange? http://www.softvision.net/ao vets/

Before 9/11, I described an impending and now recent event at The Banff Centre, Intimate Technologies, Dangerous Zones:

Intimate Technologies/Dangerous Zones focuses on the developing invisibility and ubiquity of technology in our lives, and their aesthetic and ethical corollaries. Mobile and wireless technologies seem to be overtaking laptop and desktop, and computer creators are now designing wearable, personal technologies that adapt to a variety of personalities and uses, effectively creating new, virtual, social spaces. Young people have made great use of mobile phones, creating powerful alternate communities and languages. Cheap, mobile technology seems to be a model for sustaining the peer-to-peer revolution. The immaterial aura of signal and bandwidth influences the very fabric of our beings, moving us into a realm of constant connectivity-a dangerous, seductive zone-where the frontier between liberty and control, mobility and invasiveness, utility and disjunction, comfort and menace is blurred and leaking. We will look at wireless mediation in all areas of human life, working towards anthropology of usage. We will strive to understand how intimate technologies transform our selves and the way we tell stories, relate, play and work, and how to create positive applications and experiences for these ubiquitous networks and technologies.

Design practices and outcomes are alarmingly gendered, despite the work of researchers such as Sidney Fels, who looks at embodied and unencumbered technologies of intimacy. If men play at cyborg, as engineers, designer, military machinists, then women play at the utilities of flirtation and seduction, the intimacy of emotions in the context of wearable designs. -

One thread returns to notions of the individual, their ownership of space and notions of statehood and identity. Privacy is a construct that hangs in part on the achievements and constraints of the social transformations and resulting bourgeois revolutions of the 17th and 18th centuries. It stands hand in hand with the establishment and strengthening of the nation state. Ideas about citizenship, belonging and related rights are integral to not only identity, but the design of identity, in architecture, As Gilles Lanes has pointed out, the Reformation, with its religious dissent, required an architecture of privacy. Labour, fashion and art historians have chronicled the organization of the bourgeois family and a division of labour that included domestic labour. Clothing becomes a representation of mobility, privacy, individuation and finally, access to citizenship.

My discussion will centre on ways that intimate technologies, especially those within wearable design play against, emulate and resonate against the absolut orange of the technologies of war fashion.

Round Tables

ISEA2002 NAGOYA [Orai]

"Migrations: Transit between the nets of art, militancy and Education"

Ivana Bentes
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Abstract

The "Migrations" project is building a meta-site for research and experimentation with the objective of studying concepts in "transit" (such as nets, immersion, interactivity, communities, hyper-narratives) that migrate from the conceptual and electronic art production fields (net art, web art, etc.) and reach the field of social and political applications in the net-activist fields and long-distance education (collective intelligence, meta-language).

1. Context

This research, initiated in 2000, has a conceptual and experimental aspect of comparative analysis: an effort of reflection on transit, convergence and integration of distinct domains from a common basis, originated from experiments of emerging Brazilian and foreign artists in the field of web art.

The research is being carried on at the PACC - Projeto Avançado de Cultura Contemporânea (Advanced Project for Contemporary Culture, www.pacc.ufrj.br), in the Federal University of Rio de Janeiro, Brazil, and should be available on line in 2002. Three modules, working independently, converge to a common field and ponder the state of web art and new technologies of communication in a country like Brazil, where "global" aesthetic issues are discussed within a "local" territory of fractures and social paradoxes. Thus, realities that are apparently distant, such as aesthetic experimentation and political networks of militancy, can converge.

2. Concepts and experimentation in the field of electronic art

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3. Social and political applications of "networks" in the social and net-activist fields

Beyond aesthetics, we are able to find a series of political and social applications for the concept of _networks_. Starting from the metaphor of "network" and hypertext, we can establish connections and applications that _migrate_ from the artistic field (electronic art) to the social field: urban networks, electronic activism, virtual communities.

Case studies to be analized rend explicit the transition from the metaphor of electronic networks to the networks of political action, going from language to action and vice-versa ‹ as seen in the successful use of the internet by the Zapatista guerilla, led by Sub-Commander Marcos since 1994, in Mexico, the first local political appropriation of a globalizing media. "The revolution will not be televised, but it will be on-line" ‹ says one of the guerilla slogans found on the internet. A new idea of politician is configured in this experience and it is symptomatic that one of the most typical Latin-American products, the guerilla, gets updated and recreated on the internet. The electronic network and the Latin-American guerilla have some common characteristics: both depend on a decentralized, mobile, fast and maleable information network; neither is subject to massification; and both build strategies and actions on a step-by-step basis. They do not depend on a leader or a center. Examples of how transational activists operate within the network.

4. The use of concepts and the experience of electronic art in long-distant education

On how the experimention born in the fields of art and political activism can be applied in the field of long-distance education and presencial education. Self-organization and self-construction of knowledge. Teachers as mediators, moderators and tutors. Shared construction of knowledge. Mediated dialogues, lists and group discussions as models of teaching-learning.

In Contemporary Art Today, is There Self-Censorship in New Media Art?

Stéphanie Morissette

Abstract

This Round Table is on self-censorship in arts using new media and technology. The discussion will center around the subtle control the institutions, museums and curators exercise on the creative process of artists and how the artist's dependence on the art milieu can lead him to use self-censorship.

1. Self-censorship

In contemporary art today, artists working with new media and technology need to meet two intimately linked conditions in order to be able to create. First, the artist must have access to sources of financial support (e.g.: from art institutions or governments) and second, he needs to be recognized by the art milieu. The recognition and acceptance by pairs facilitate access to the financial sources. The question asked is whether this vicious circle of financial support and recognition encourages artists to use self-censorship in order to fit in the art milieu and receive financial backing?

Self-censorship means the artist feels he has to limit himself. The artist has to think about what the public and the art milieu want, and he feels he has to compromise on his ideas in order to fit in the milieu and gain recognition. Self-censorship stops the artist from fully exploring his creative universe. It destroys spontaneity. Censorship does not come from governments or religion anymore. The power is now in the hands of the art milieu itself i.e. the institutions, the artists, the museums, the curators and the investors. It can lead art professionals to feel the pressure to create projects that will please the investors.

2. Program

This round table will reflect on the difficulties artists encounter in their creative process when using new forms of art and new media. We will discuss the financial aspect, the diffusion aspect and the influence art institutions have on artists, all of which can ultimately lead creators to self-censorship.

2.1 Speakers

The public is invited to sign in and participate in the exchange with the guests speakers. Stéphanie

Morissette, (artist, Québec, Canada), Gunalan Nadarajan, (art theorist, Singapour) and Dr. Irina Aristarkhova, (art theorist, Russia).

2.2 Location

October 29th, 2002 at 11:40 am
Room 8, meeting room, 4f, Nagoya Harbour Hall

Where are we going?

Trends, Power, Sex, and the Future of 3D Computer Graphics

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Abstract

Three dimensional computer graphics technology provides unique tools for creating imagery to artists. However, artists often face issues that are unique to the field, such as learning complex software or gender inbalance. This round table meeting will discuss how artists are dealing with these issues and the future direction of the field.

1. Introduction

In the last three decades remarkable accomplishments have been made in the field of three dimensional computer graphics (3D CG). Real-time 3D graphics are essential to household video game devices, and more feature-film length animations are created fully with 3D CG every year. Researchers have already achieved one of the largest historical goals of the field—synthesizing photo-realistic imagery. Many audiences can no longer distinguish live actions and CG elements in movies.

3D CG is one of the most popular mediums in Electronic Art. The technology is used not only for creating still images, animation, and VR, but many artists also have attempted to use it in performance, installation, and web-based art. However, artists encounter numerous issues, such as intensive work processes, steep learning curves for acquiring skills, influences of the mass-communication industry, gender imbalance, dependency on expensive software, and production of artworks lacking concepts. These issues reflect the problems we face daily when dealing with new technologies, which are unavoidable in contemporary life. This open discussion concerns these issues in 3D CG, especially in non-VR works such as 3D animation in Electronic Art. The hope is that this discussion will bring additional insights to our fields and begin development of new directions for the future.

2. Discussion topics

2.1 Current trends of 3D

(a) Usage of 3D technology in Fine Arts
(b) Differences between 3D trends in regions and countries

2.2 Influence of commercial software in the field

(a) Power structure and software:

> - Why do some people blindly worship particular software packages?
> - Which software - does it matter?

(b) Are you creating the work, or is your software doing it for you?
(c) Sexy interface – do we need it?
(d) How much time do we spend learning software packages?

2.3 Why 3D?

(a) Why do we choose 3D for our artistic expression?
(b) Does 3D technology add any value to our work?
(c) Power of control and possession – artist as a "creator" of the world.

2.4 3D and counter-intellectualism

Some say that most 3D CG artwork lacks in concept. If this claim is correct, what in 3D CG promotes this tendency?

2.5 Is 3D for boys?

(a) Dinosaurs, spaceships, aliens, and 3D girls – What's next?
(b) Gender imbalance in the field of 3D CG. Is CG for geek boys?
(c) Pornographic expressions in 3D CG:

> Nudity is acceptable in traditional art, such as painting, sculpture, and photography. Is nudity acceptable as well in 3D CG if 3D CG is a still image?

(d) Power of control and possession 2 – "my fantasy girl."

2.6 The future of 3D

(a) Where are we going with this technology?
(b) Real-time 3D technology.

Content Development for Wireless Applications

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Abstract

the-phone-book Limited presents a roundtable discussion with integrated live chat for the-sketch-book.com premiere at ISEA2002, Japan.

Mobile telephones have changed the way we interact, socially and at work; kids have developed their own secret codes, lovers maintain permanent contact regardless of physical distances, consumers have learned to accept that a £4.00 handset ringtone can be advertised as 'free' - it's only the cost of a phone call after all...

But how can these technologies bring new opportunities to artists? What are the technical and creative limitations when considering new designs for wireless interfaces? Are there cultural considerations about distribution of content and the global marketplace that directly affect what content is produced and distributed, and how the process is managed?

This event continues a series of discussions following the developments of the-phone-book Limited to the end of the year as we produce three of our main commissions utilising the limitations - and potentials - of wireless interfaces across the world.

The first discussion was held in June 2002, and included input from a diverse group of technologists, artists and writers, including:

Brian Crawford (ifone, UK); Nick Crowe (artist, UK); Thomson & Craighead (artists, UK); Tom Holley (Creative Director, Huddersfield Media Centre, UK); Nickie Hirst (Pogo Technology, UK); Kathy Rae Huffman (Cornerhouse Creative Director, UK); Stephan Meyers (Nokia, USA); Stuart Nolan (needleworkTV, UK); Sadie Plant (writer of Motorola's 'On The Mobile' report); Douglas Rushkoff (American writer/cyber journalist) plus writers from the-phone-book.com community.

Due to the dynamic nature of a constantly changing wireless environment, all these events, including the roundtable for ISEA, are not intended to draw conclusions about wireless developments, nor are they exclusively academic - although academic input is equally welcomed.

The chat sessions merely intend to provide an opportunity to openly discuss issues held as important by creators and developers alike, examining international restrictions and opportunities in the aim of enhancing wireless content production and the distribution of innovative creative materials.

For further information on the-phone-book Limited's portfolio of public projects, please view the following:

http://www.the-phone-book.com - Arts Council of England funded continuation of the international open submission showcase of ultra-short-fiction for wireless internet.

http://www.artones.net - North West Arts Board action research project commissioning Nick Crowe (Manchester) and Lucy Kimbell (London) to create commercially available mobile handset ringtone/logo content, premiering in September at the Liverpool Biennale Independents Programme with White Diamond, and then with Thomson & Craighead's items for the dot-store launch at London's ICA.

http://www.the-sketch-book.com - ultra-short-animations for wap, i-mode, and FOMA /3G, with content made by students of the Shigenobu Otani and Koji Shibazaki college, Nagoya.

Poster Sessions

Poster Sessions

BaudriR: who owns this text?

Annabel Frearson
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http://www.baudrir.com

Abstract

MattBayan2: Baud is typing in some shit from a book he has to read for class. It's esoteric and unconne
MattBayan2: unconnected.
MattBayan2: and damn rude.

'BaudriR' [http://www.baudrir.com] charts the live reproduction in internet chat rooms of Jean Baudrillard's 'In the Shadow of the Silent Majorities'. The Semiotext(e) publication has been keyed in, line by line, cover to cover, (including the ISBN number) as BaudriR navigates through a broad cross section of AOL chat rooms: from 'NAM VETS AND PROUD' to 'pokemon forest', 'Jesus sucks' to 'Car Chat', 'Anthro Mating Plains' to COPS WITH ATTITUDES', 'Hillary for Senate', etc, etc. In the midst of talk about sex, politics, religion, sex, Eminem, or pretty much nothing, the reactions to BaudriR vary from confusion to ridicule and even agression, with just a few people making the Baudrillard connection (see further quotes).

This project aims to take on both the chat-room phenomenon and Baudrillard in their own terms, literally. Baudrillard's text simultaneously describes and is contradicted by the chat-room dialogue. A chat room is an invisible simulation of a physical space based less on geography than topography and eclectic desire, in which people objectify themselves, revealing more from behind their masks about their true nature, beliefs, desires and prejudices than they often would in the 'real' world.

The global mass speaks back in very real terms and yet everyone in a chat room is represented via a coded name, an adopted persona (often fictional or famous) and mostly regurgitates clichés or inanities. The forcibly fragmented structure precludes coherent expression and juxtaposes statements often with surreal effect. The artificial construct both collapses sense and forces new meaning.

This project also brings into question issues of authorship and ownership: this 'book' has been written by thousands of people, this writing has been appropriated – but isn't language always already, by its very nature, an appropriation? And yet within the chat rooms a new language of codes, abbreviations and symbols is beginning to evolve in response to the constrictions of the medium.

AOL (America Online) is a monolithic corporation, now merged with Time Warner to reign formidable power over media production and distribution. Within the chat rooms there is frequent reference to the AOL TOS (Terms of Service) and AOL's powers to suspend or banish offenders from the airwaves for violations and disruptive behaviour. AOL sporadically polices the dialogue and encourages members to report offenders, effectively censoring unwanted dialogue.

Who owns this text?

Quotes from BaudriR:

Good1com:	baudri use that in context, and not from the book your plagerising
HISTORY394:	BAud: did you just finish up your indergrad. course on French Revolution?
GBushJR100:	Baudriard, i'm bored get to the point here
Cand1e1ite:	Namvet, Baud?
Zimmmzam6:	What the hell is Baudr talking about and can you make him stop?
MattBayan2:	Baud, you're creeping me out with this so early in the morning.
MattBayan2:	Baud, the only implosive process I want to see is your head imploding.
EHara97350:	who is baud anyway?

Crossroads

Sergio Andrés Yepes Sánchez
Colombian
Electronic Artist
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Abstract

The approach of this poster session is signed by the personal experience with the crossroads, as a Colombian mestizo, between my Indian inheritance, represented in my contact with the corpus of knowledge and science maintained by our shamans (curacas, werjayas, mamos, taitas, etc) and the corpus of knowledge represented by my western education and contact with technology.

Theme

Do not go gentle into that good night,
Old age should burn and rave at close of day;
Rage, rage against the dying of the light.
Dylan Thomas

This poster session revolves around the encounter of western and indigenous ancestral cosmo visions, represented in the search of a mestizo individual at an artistic, aesthetic, intellectual and spiritual level.

It depicts the comings and goings of an artist who has chosen to enrich his inner world in the sources of ancestral[1] abyayalan[2] knowledge and visions and who has found in electronic art a space to establish a dialogue between his western and ancestral formations.

The work in minga[3] (collective, lending a hand), from the aboriginal tradition is closer to collaborative and transdisciplinary work proper of electronic art and multimedia. The new forms of narrative are making a full circle, without knowing it, and arriving in realms proper to oral tradition.

The recently (not older than 30 years) forged (acknowledged) category of hypertext is actually as ancient as the so called aboriginal world and connatural to the abyayalan way of thinking and to the ways in which this body of knowledge is transmitted and communicated.

This poster session will be a mediatic presentation built in minga (collaboration, lending a hand) with artists, musicians and thinkers who come from experience with the tradition of Yagé, Yopo, Mambe[4] and other sources of knowledge.

It seeks to represent the crossroads between the ancestral body of knowledge; original source of the abyayalan science, art, thought, tradition and human development and the technology coming from the construction of the western way of thinking.

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1 Body of knowledge kept by the Elders (Taitas, Curacas, Abuelos, Werjayas, Shamanes, etc.)
2 The here land, the fullfiled land (La tierra de acá, tierra en plena madurez), in Cuna language.
3 Collective work proper of the original peoples of Abyayala (America).
4 Plants of knowledge

Introducing Future Physical

4 Bedale Street, London SE1 9AL
www.futurephysical.org

Future Physical is a major digital arts programme co-conceived by Shinkansen and East England Arts, which will explore the interface between the body and technology. Running between December 2002 and April 2003, it will bring installations, research, club events, performances, network exchanges, workshops, web artefacts, creative user research and debates to the East England region.

Mixing international, national and regional commissions, Future Physical has been split into four research strands: Wearable Computing, Biotechnology, Ecotechnology and Responsive Environments. In addition, the programme will include the V-You project, which will allow East England residents to choreograph dances featuring their virtual selves.

Among the artists that Future Physical will feature are internationally renowned names such as Thecla Schiphorst and Susan Kozel, f0.am and Masaki Fujihata. Future Physical will also run 18 projects chosen from entries to a call for Open Commissions, including submissions from the likes of Martin Kusch and Marie-Claude Poulin, Anthony Roberts and Philip Warnell, Alexa Wright, Nicholas Stedman, Sophia Lycouris and Yacov Sharir, and Jane Prophet.

In this poster session, we propose to familiarise you with the highlights of the Future Physical Programme, and with the diversity of commissions within Future Physical, which range from a reactive blind created by Rachel Wingfield, printed with organic foliage which will appear to grow naturally and evolve to TxOom, a responsive space created by f0.am in which spectator/participants, constrained physically inside costumes, interact with each other and the space through motion-tracking and regenerate their environment through visuals and sound.

Future Physical aims to explore questions such as: "Can technology give us a rich experience of life and human interaction?" "What are the future visions of the human body's interaction with digital tools? "What is live?" And: "What is authentic?" Through creative user research, we aim to explore the blurring of boundaries between spectators and participants in relation to new forms of digital artworks. We are committed to concepts such as co-authoring, group processes and open sourcing, and will debate such topics in greater depth during this poster session.

The Choreography of Everyday Movement

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"The Choreography of Everyday Movement" envisions as a topographical mapping the culturally inscribed nature of our everyday travels. Using GPS, the project seeks to render visible our movement through the built environment of the city, revealing socio-political and poetic patterns of traffic flow through the urban body. In these drawings we see images as often as we detect the privileging of one route over another, the concentration of movement through particular neighborhoods, and the repetition and variation of a traveler's movement over time.

"The Choreography of Everyday Movement" takes process and performance as the subject of the work. As a live element, participants are tracked with global positioning satellite receivers as they move about the city. The trail of each participant's movement is transposed into visual terms as a dynamic drawing generated in real-time wirelessly over the Internet. Drawings are then archived and presented for viewing in a three-dimensional format. Each journey is printed on acetate, registered against prior journeys, and sandwiched between stacked 1/2" plates of glass. The stacks of glass grow taller over time with the addition of subsequent drawings, thus creating an expanding "z-axis" through which the viewer can observe changes in the movement of each traveler over time. The performance of the piece requires no special expertise. Dancer/pedestrian, performer/spectator, artist/non-artist – each is equally capable of participating in the making of the work.

Geographical reference data, present as longitude/latitude coordinates in the real-time drawing, is removed in the final image so as to foreground the expressive character of the line---a line upon which we project our own interpretations. This one looks like a deer, that one like a figure with arms stretching upward, legs intertwined. The global positioning satellite receiver, designed for precise measurement and tracking, is subverted and re-cast as a kind of giant pencil or tool for making chance compositions. Marks that reveal the design of transportation grids become compositions that engage the imagination like clouds in the sky.

The relationship of performer/spectator is re-configured in the real-time generation of drawings over the internet. The performer is only visible as an ant-like dot crawling across the screen. Movement and physical presence are reduced to the most basic abstraction, yet we are amused by what appears as a dynamic animation punctuated with moments of unintended physical humor as the little dot stops at a traffic light or crosses over the path of another performer. The performer is insulated from the gaze of the spectator both in the moment of performance and in the recorded image of that performance. The viewer never sees the body of the performer, nor vice versa, creating a shifted and mediated economy of the gaze that stands in contrast to traditional live performance.

The project is informed and inspired by the work of Richard Long, the Situationiste derive, and the Australian aboriginal songline. As wireless technologies (GPS, cell phones, portable sound systems, and instant messaging devices) increasingly permeate our daily travels, "The Choreography of Everyday Movement" seeks to track, in visual terms, the changing nature of our spatio-temporal perceptions.

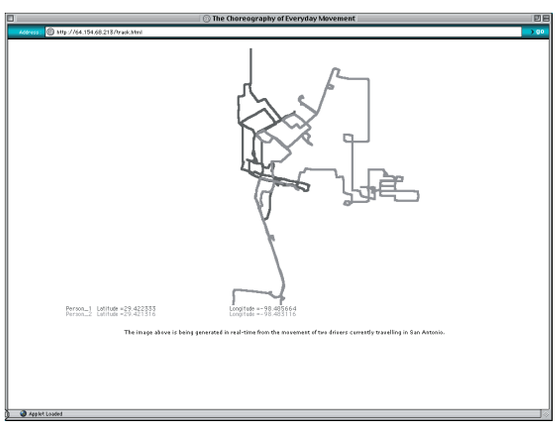

Fig. 1 Real-time tracking of two drivers' movements

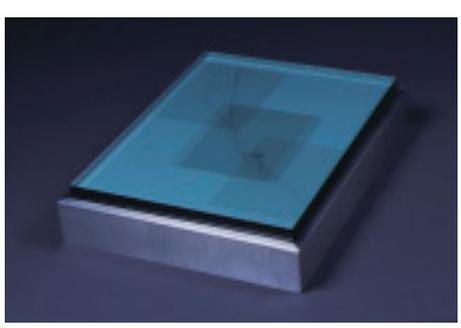

Fig. 2 Three journeys layered between glass sheets

Open, Free, Pass It On

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Abstract

The Artvo Project welcomes creative minds in the fine art and design fields to let art projects prosper using the Internet as a medium. By allowing other artists and designers to share and modify each other' s work openly, this project promotes a new creative information exchange.

1: Introduction

The open source movement has caught the attention of many software developers with the popularity of the Linux operating system and others. Similarly, Artvo is conceived as a way for artists and designers to share and exchange their project sources with each other. By doing so, they leave behind the source files for others to reuse and modify at will.

There has been a shift in values over the past 15 years as to how information should be shared. Much of the open source software now no longer just belongs to an organization or individual – it's public. The same issue can be, and should be, addressed in acts of art creation. In drastic contrast to traditional works of art, no individual owns the rights to works of art created at Artvo.

2: Description

Artvo consists of two sections, art projects and discussions. Users are encouraged to download art projects such as 3D objects, work on them and upload their modified versions of the files back to the site (the website can be found at: http://www.artvo.org, See Figure 1). Members are welcomed to use any and all projects made available at Artvo as well as participating discussions and projects. All project files are free for personal and commercial use.

3: Goal

This project strives to challenge artists and designers to open up their work and share them with their peers. Artvo expects to serve as the birth of a new generation of art movement – open source art – an art form where ownership is open, collaboration between artists and designers is encouraged, and original ideas are further developed by others.

4: Future Potential

One of the aspects of Artvo is the "evolution" of the project files. The notion of an "evolving" art as an organism (eventually developing into separate and distinct species) has intrigued the developers of the Artvo project. Future projects may include more evolutionary aspects into the site such as creating branches of chain of evolution and letting unpopular chain to go extinct.

Reference

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[2] "Survey Provides New Insights into ' Hacker' Culture" The CG Media Releases. 31 Jan. 2002. The Boston Consulting Group. Mar. 2002 <http://www.bcg.com/media_center/media_press_release_subpage59.asp>.

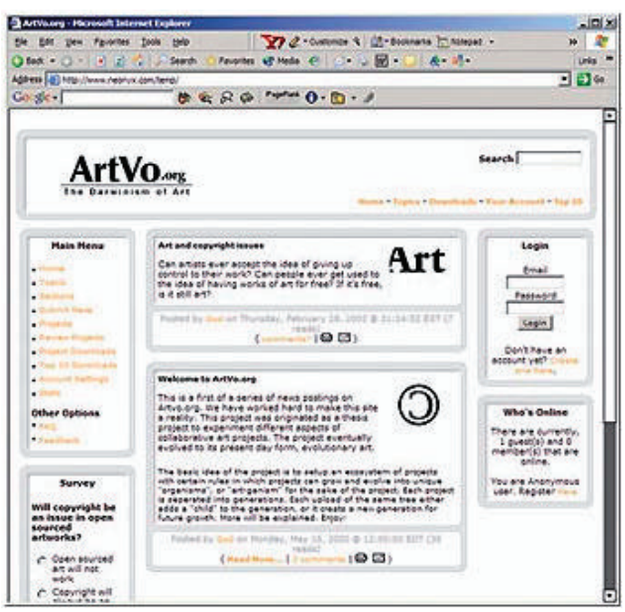

Figure 1: Artvo.org interface

CybaFaeries

Garry Shepherd

Abstract

CybaFaeries (Faerie Robots) have been created to form part of a robot mythology for future intelligent robots. Their tales will contain information of the future robots origins, their ancestors relations with their creator/s, survival skills, entertainment and the odd fashion tip. Glamour, after all, is an old faerie spell.

A Robot Mythology

For Artificial Intelligence to be in any way holistic, some sense of origin must be placed within it's structure. Not just a file creation date or factory address. A sense of origin of being.

We humans are well aware that we came from our parents, but we also regard our origins of being human with equal, if not more, importance.

Though very different, both religious and evolutionary explanations of human origins strongly link us with a world before human existence. A world very different to the one which we now see. Throughout human history this link has been repeatedly sited as proof of our legitimacy to belong to our world.

I have no doubt that future intelligent robots too, will one day query their origins and relationship to those who came before them. Do we propose not to tell them? What if our ancestors refused to tell us? So just what would a future parent robot read to their young at bedtime anyway? Scientific American, Terminator 2? Perhaps Astro Boy.

Using my Celtic cultural origins both as a model and to impart something of my personal heritage to future robots, I thought faerietales would be nice. Tales where the main characters and issues are robots. Not all would be moralising tomes. There would be some fun and adventure in there too.

The CybaFaeries

Having spent the past decade working with virtual environments, I was interested in bringing something of these environments into the physical domain. With a combination of physical properties, AI and remote body attributes, contemporary robotics suited this admirably.

Extending this further I became interested in creating a hybrid entity which would exist in both the physical and virtual domains. This hybrid entity could be anything, but using mythological creatures such as faeries, gave me the opportunity to play with human concepts of existence.

These faerie robots or CybaFaeries, (Combining both an older meaning of 'Cyber' - Robotic and contemporary meaning – Virtual Reality) proved to be a delicious blur between myth and fact.

By building a functioning faerie robot, I could say in all honesty, that CybaFaeries really did exist, in both our physical world and our contemporary version of the 'otherworld', virtual reality. The virtual aspects of the CybaFaeries are manifest through an AI system which includes 3D computer generated environments for CybaFaerie avatars.

Using the premise that faeries have had robots for some time now, and humans have only just discovered them, I have been able to create a range of CybaFaerie characters, each with their own 'story'. Fé-Oh, whose name is derived from the rune 'feoh' was the first.

Fé-Oh (pron: fay-or)

Fé-Oh

Fé-Oh (pictured left) is a CybaFaerie Princess who ran away from home because her mother wanted her to marry a troll.

She headed for the futuristic faerie metropolis of Mel-Ben with her trusted Wolfdragon robot, a former member of the royal guard, and ended up in the rather seedy district known as 'The Lane Of Delights'. She loved the fashion, café's and parties. So she decided to stay.

The only problem, there are other faerie princesses there too!

Fine Art Robots

I have opted for the term Fine Art Robot to distinguish them from industrial, entertainment and toy robots,

The CybaFaerie robots design are a mix of Celtic mythology and Japanese Manga, a cross cultural reference to the multicultural city in which I was born (Melbourne, Australia) which has over 150 languages spoken. Manga has a strong cultural presence in Melbourne, as too Celtic culture.

Fé-Oh (50cms high) and the Wolfdragon she rides are both made from reinforced moulded paper mache, fixed to an aluminium frame resulting in a light weight unit with low power consumption. I made the moulds in my studio from finished clay models.

There are no servo or step motors used at all, instead DC motors and an array of cogs, cams and polymer muscle systems are used. This was an intentional part of my design strategy, to explore other methods of robot construction. Fé-Oh also has an experimental articulated spine, part of my ongoing research to create a 'soft' robot.

Cybafaerie*Land

For exhibition purposes, the CybaFaeries are presented in a touring immersive interactive installation environment called Cybafaerie*Land. The exhibition allows the human audience to wander through an interactive environment which interacts directly with the robots autonomous behaviour.

The audience can also tap into the robots via remote body functions which include partial control of the movement of the robots and use the robots vision systems to navigate the environment.

Four large wall sized projection areas which create an immersive cube environment, display animated interactive 3D computer models of CybaFaerie landscapes and the CybaFaerie metropolis of Mel-Ben. The robots respond emotively to various scenes as these are conceptually their homeland.

The robots can also be presented in traditional gallery settings and as festival roaming exhibits.

More information, contact and updates are available on www.cybafaeries.com

Morphing Gender: Transitional forms in Artistic expression

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Abstract

The presentation focuses on gender and transitional forms of artistic expression. Specifically, how the role and the meaning of gender as well as its representation with in the field of arts has changed. This representational shift has been partially leveraged by the lack of gender clues evident with online communication on the Internet in 1990s. First of all, we chose an appropriate word to express this change by looking at technical terms for computer graphics. The most appropriate word we thought for this was "morphing." Morphing is generally known as a technology to express transitional forms of two different faces (images) in computer graphics. Two faces (images) are synthesized with in this software resulting in a third relatively unique face (or image). The morphed face (image) draws upon the first two for its "data" but looks different from the two originals. What if we were to apply this technique theoretically to synthesize faces of man, woman, intelligent machines and anthropoids? We might be able to see unique faces of our transitional culture.

Morphing Gender

Generally speaking from the feministic point of view, art criticism is characterized by the dominance of a masculine value system. As evidence, "women's art" is often treated as a special category, and this categorization tends to imply antagonism between man and woman. This dualistic and often oppositional relationship is neither old or new. However, we should be able to create a new setting for emerging art and intelligence, that transcends this duality. A comparison between this and other forms of dichotomic categorization may be useful.

Another example of the dichotomy between "human art" and "non-human art." The latter now encompasses two areas. One is in the realm of zoology. Zoologist Desmond Morris studied Congo a chimpanzee with the ability to paint. According to Morris, Congo was the only chimp that painted with a brush and appeared to be making aesthetic decisions in his choice of paint color and the extent of its use.The other form of non-human art is found in robotics and artificial intelligence (AI). Harold Cohen's Aaron, an AI painting program, is a good example.

Our question is related to the Turing test proposed by Alan Turing (Turing, 1950) in the context of proving a machine's intelligence. Turing's test #2 attempts to distinguish a machine from a person. On the other hand, Turing's test #1 attempts to distinguish a woman from a man.

Katherine Hayles said "What the Turing test 'proves' is that the overlay between the enacted and the represented bodies is no longer a natural inevitability but a contingent production, mediated by a technology that has become so entwined with production of identity that it can no longer meaningfully be separated from the human subject." Prologue / xiii "HOW WE BECAME POSTHUMAN"

As Katherine Hayles pointed out in "HOW WE BECAME POST HUMAN"much attention has been paid to the former, but not the latter, the gendered elements of part of the Turing test.

However, we would like to, indeed we feel the need to reconsider it. This need arises because we have to recognize and reevaluate the fact that we live with our gendered bodies in our gendered culture, as well as because we now encounter body political problems mentioned in Donna Haraway's "Modest_Witness@Second_Millenium. FemaleMan_Meets_OncoMouse."

Haraway references a TIME magazine special issue on "The New Face of America" (Fall, 1993) as an example of for a concept she uses called "SimEve." She has Asian, Latino and Black features, actually she is a mix of several races and literally a morphed image.

Reference

[1] Alan M. Turing, "Computing Machinery and Intelligence", MIND DESIGN II, A Bradford Book, The MIT Press, 1997
[2] N. Katherine Hayles, "HOW WE BECAME POSTHUMAN", The University of Chicago, Chicago, London, 1999
[3] Donna J. Haraway, "Modest_Witness@Second_Millenium. FemaleMan_Meets_OncoMouse", ROUTLEDGE, New York, London, 1997

Animation and Puppetry: Gathering Voices in the Theater of Attraction

Kristine Diekman
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Abstract

"Sharing in the trickery of the automaton is merely another way to define ourselves as human…. " (Jean-Claude Beaune, "The Classical Age of Automata: An Impressionistic Survey from the Sixteenth to the Nineteenth Century")

This presentation explores the intersections of character animation, European automata, and Japanese Bunraku puppetry as mechanisms of simulation, moral introspection and theaters of attraction. These stand-ins employ attraction and illusion to suspend the viewer between belief and disbelief, desire and repulsion. They also allow the viewer to indulge in that which is forbidden and unspeakable; ghosts, monsters, death, loss of boundaries, and magic.

Through borrowing and altering dialogues from chat rooms related to infanticide, crime, punishment and retribution, my work investigates how the Internet can become a site of social determination and regulation. Character animations which speak these dialogues embody the contradictions of identity found between the real and the represented body. The public space of electronic society becomes a form of "Orai".

Rules of Puppets

1. When a puppet calls out another's name it points at the skies with its hand.
2. To walk softly the body should be bent and the thighs lifted; to walk in darkness the hands are extended.
3. When asking a question a puppet steps forward; in making a refusal it steps back. To show fear the face looks right and left.
4. The female puppet wipes away her tears by moving her face, the male by moving his hand.
5. Tears may be wiped away with the left hand once in every three times, but if the puppet has its back turned to the audience, the left hand may only be used once during the course of a play.
6. To express understanding the head must be bent; for astonishment, it is raised upwards.
7. A puppet leans backward to relate a story, and to listen to one, bends forward.
8. A male puppet moves his shoulders in laughter; a female puppet bends her head with her sleeve before her mouth.
9. A great master does not move his puppet if there is no reason to do so.
10. It is bad for a puppet to stand idle after speaking, but it is worse for it to move unnaturally.

The Dialogue

A: I don't think it is fair to call this woman or what she did evil. It's obvious that she has some severe mental problems.
B: Of course, when women kill, somehow excuses are made. This time, it's post partum depression. Next week it'll be something else. Katie Couric and Rosie O'Donnell will sympathize and empathize…empathize?
A: This doesn't excuse her actions, but it can help to explain what was going on in her mind. Let's shed some light on this disorder so that it doesn't happen again.
B: She belongs in jail, away from society for the rest of her miserable life. What she did doesn't even compare to her husband. He killed NO ONE…get it NOW members? Screw you and your agenda.
C: Just like her, I am a parent. I can't imagine anyone systematically killing his or her children. It makes my heartsick when I see those pictures of those kids lined up with their trick or treat costumes on. But let's wait and see what we can learn.
B: Let's stop looking for excuses. It makes me feel better to know she is going to straight to hell.
D: You must find yourself a morally superior person with a close "in" with God to know he sending her to hell. God will certainly grant you the heavenly immunity necklace as on the TV show, Survivor.

Hybrid Aesthetics: Art as Dynamic Signification

Carlos Rosas, Associate Professor, School of Visual Arts, Penn State University
Simone Osthoff, Assistant Professor, School of Visual Arts, Penn State University

Abstract

EMITTO.NET is a Net-based cultural resource created by Chilean-born new media artist Carlos Rosas and Brazilian-born artist and writer Simone Osthoff. This project, to be launched during the conference in Nagoya, is designed to act as a catalyst for digital cultural dissemination, interdisciplinary collaboration, critical inquiry, and artistic experimentation. It features the streaming of video lectures and performances; critical articles, news, reviews and interviews; a gallery of Web art organized by guest curators; and links to international partners with emphasis on Latin America. Understanding art as a dynamic of signification and a participatory critical practice, EMITTO.NET enables the creation of meaningful connections among often disparate, unequal, and unexpected partners, exploring artistic practices that are hybrid, non-linear, multimedia, intercultural and interdisciplinary. In analogy to the conference theme ORAI, EMITTO.NET acts as a generative frame for the dissemination of content and the development of electronic literacy, continuously raising questions about art, society, and the relevance of cultural agency in a digital age.

As technologies emerge, are adopted, and become viable, an ever-widening range of possibilities and questions have opened up. Artists can create, and more importantly self-publish, in a range of dynamic media. Among these is live broadcasting via the Internet, which has recently gained momentum and is raising a multitude of questions by challenging institutional structures and parameters in academia and elsewhere.

Much of the content and experimentation by individual artists, collectives and students is challenging the way we communicate, choose to organize, learn, teach and research. The anxiety over the politics of visual culture, especially in a society that aspires to democratic values, is deeply connected to changing modes of representation and communication. These can alter our notions of "Western, or American culture" as well as forms of sociability and subjectivity.

As we shift to a more dynamic participatory interrelationship with media/technology and move away from what has been largely a passive and static experience; our poster session poses the following questions:

Why is the live broadcasting of content often seen as a liability, is it too real and/or immediate? The institutional "fear factor" of controversial content and accessibility continuously raises the question: "who gets to decide?"

How will institutions deal with true public broadcasting usage and rights? Who owns the pipeline, maintains order and rates the content? How does art maintain autonomy within a commercialized network if a private alternative is closed to "restricted content" (like most academic institutions) and how much public access will there really be?

What is the university's role in providing a support structure: if email was state of the art communication for the masses over the past few years, isn't broadband video conferencing (a type of live broadcasting) where we are headed? If so, it would seem that the usage and content of a live broadcast cannot be fully controlled any more than that of a personal email. Where will academia ultimately stand on this issue, and how will it provide support for the content and its creators?

"Purge" A Series of Webcasts: Rosas Studio 2002

GridCosm: a Tunnel of Visual Conversations

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Keywords

Internet, art, Sito, interactive art, collaborative art.

1. GridCosm and Sito

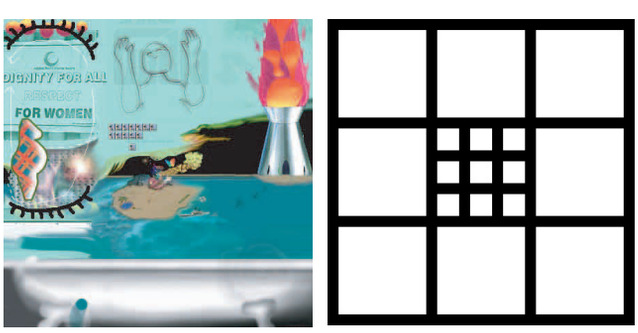
GridCosm is a collaborative Internet art project by Sito Electronic Arts (www.sito.org). Sito is a pioneer community of digital artists who have been developing collaborative projects since 1994. It started as an FTP site, and evolved into a rich web site hosting digital galleries, discussion forums, and many unique art projects, conceived, programmed and designed collaboratively by its participants, which are spread all over the world. In 1996, Sito's project HyGrid won a Prix Ars Electronica in the net-art category.

Inspired by HyGrid, another project called GridCosm (www.sito.org/synergy/gridcosm) was launched in 1997, and over a hundred artists have contributed more than eight thousand images during its five years of existence. GridCosm is still going on and more images are added to it everyday.

2. How GridCosm Works

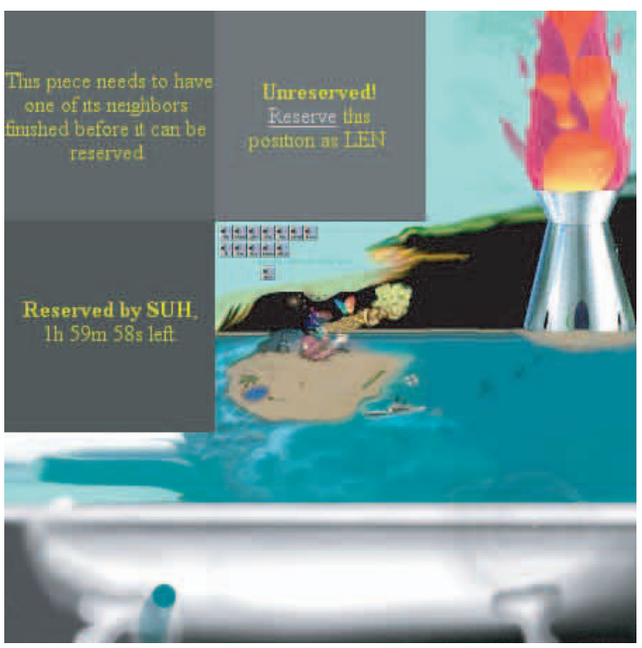
Gridcosm is one of various Sito projects which uses a grid metaphor. Many small images, each created by a different artist, join seamlessly together to from a bigger picture.

New images can be added in a telescoping process. When a nine-image grid is finished, it shrinks to the size of one grid piece and occupies the central position in a new grid level. This goes on indefinitely.



Picture 1: The project's underlying grid structure

When we reach the topmost level we also enter the collaborative mode. Depending on the level's stage of completion, we can see some finished images, some blank squares and also some reserved squares.



Picture 2: A level in progress

To add an image we choose the space we would like to fill in and then reserve it. We need to create the image and upload it to Sito server in the next three hours, otherwise the space will be made available to another artist.

The image uploading and management is a wholly automated process, controlled by scripts, programmed by Sito participants.

3. A Visual Dialogue

In the process of creating a never-ending, seamless image in the shape of a tunnel, the Sito artists engage in a dialog made not of words, but of pictures. Images are created in response to others, and each square blends to its neighboring images in different and sometimes unexpected ways, reinforcing and/or denying their pictorial aspects.

Arising more as a "side effect" than being one of the planned goals of GridCosm, this visual conversation ends up being very rich and rewarding for the artists. Some of the key factors that allow this visual dialogue to happen are: the project's automated interface that provides a smooth and fast way to add new images and join them together; the artists' willingness to participate in a collective project and to thus share the control and authorship of the piece with others; and the fast-paced rhythm of which images are created (more than a dozen a day on average).

The Poetry of Gaming and Other Online Interventions

Joseph DeLappe

The emergence of interactive, online, “first person shooter” game spaces exist as largely overlooked environments for creative interventions. The hyper-violent, virtual world of online gaming, with it’s futuristic settings designed for purely visceral, simulated mayhem, presents an ideal forum for conceptual engagement.

The artist will present documentation from an ongoing series of “first person shooter”, online game-based spoken word performances. The first in this series of internet pieces, *Howl: Holomatch - Elite Force Voyager*, involved logging onto *Holomatch*, an online competitive shooter based on the popular TV show, *Star Trek Voyager*.

The artist chose as his character name "Allen Ginsberg". He proceeded to spend approximately 4 hours total time using the game’s ability to type messages to all players to recite/type, in its' entirely, Ginsberg's seminal beat poem *Howl*. The typewritten text appeared in yellow, on every player's screen image in real-time. As the poem is recited, the Ginsberg character is immobile with a cartoon-like speakers bubble over his head. The other players interact with the performer by killing him – he is then instantly re-incarnated and proceeds with the reading.

This work will be described, along with others, including performances using the games *Quake Arena, Unreal Tournament*, and most recently, *Medal of Honor: Allied Assault*. These solo endeavors have evolved towards a new work in progress, which involves six performers onstage, before an audience, each sitting before a computer, connected to one of hundreds of servers featuring the popular online game *Quake Arena*. The six performers, local gamers invited to participate, will recite/type, in real time, a recreated episode from the popular American TV sitcom *“Friends”*.

Each performer plays one of the characters from the TV show - they recite while typing dialogue from the episode. During game play, as in the previous solo performances, the performers are passive visitors presenting an impromptu, internet based street theatre/TV episode. Live screen images from the point of view of the players in the game are projected upon multiple screens above the stage.

Documentation of these works and others will be presented to describe an approach which considers internet-based game environments as a new type of public space for creative, conceptual, artistic and humorous activities.

Brainscore - Incorporeal Communication

Darij Kreuh, Davide Grassi

Abstract

»BRAINSCORE« is a system for incorporeal communication. Communication codes, which we developed through consideration of social aspects, are becoming old-fashioned and awkward due to increasing complexity of information technology. While until recently the body presented some help in communication as a gestural interface, it now faces great incompatibility and apathy in transferring and mediating information. We do not refer to the body as a biological construction, which we need to redesign and accelerate to be able to keep up with the techno-evolution. Rather, the body is superfluous in virtual communication environments and can easily be replaced by any virtual entity or data object. The role of a communication mediator, which has been imposed upon by an information environment, moves from the biological body to technological interfaces through semantic and functional layers. Thereby basic codes, which alter perception of communication phenomena, are changing.

The BRAINSCORE project deals with the research of communication patterns and the interface enabling the human body and the global information space to connect. It is a performance for two operators, in which incorporeal communication is used as the starting point for creating a ***controlled communication system****. The system is based on the use of brain waves and eye movement for performing basic commands while defining a new digital discourse in virtual space without using the traditional and generally established ways of communication (thus, socially recognized and conventional communication codes are abandoned – speech, body gestures etc.).*

The operators, positioned parallel to each other so that they do not face each other, establish a communication testing ground, within which they are trying to create ***a dialogue with the help of 3D objects****.*

Each operator is represented, in the space of virtual reality, by a matching avatar that embodies primitive behavioral characteristics and form, at least in the initial phase. The operators' task is to "educate" their corresponding representation in virtual space by performing a series of operations and commands, which are set up in direct relationship to the global net dynamics (macro) and the user's neuronic net (micro).

The virtual space control ensues through the terminal window (the LCD monitor), which further displays how the brain is divided into five active zones. Each corresponds to one of the global themes, which can intervene with an individual. In the space of virtual reality, each of the themes is represented by a formation consisting of twenty objects. These objects represent the transformation of the basic circular form. They are based on passwords that derive from the home page of an anonymous hacker. The identity of an anonymous user in the form of a password is the carrier of the communication code and specific features like expression, colour, texture and sound. Objects, which combine into clusters according to their specific fields (meteorology, stock exchange, transport, media and epidemic diseases), represent the incorporation and influence of global migrations on the communication process between the operators. It all regards the active combination of a co-existence of the global information system and the local brain activity. The community of objects thereby constitutes the alphabet, from which avatars are molded; they are composed of the above-mentioned features.

The selection of objects (and thus features, which are represented in avatars) is performed according to correspondence of the user's features of brain patterns.

When avatars are complete, they begin to communicate with each other in the manner that they use the data that composes them. During this phase, the characteristics of the operator's brain patterns represent the first factor in the restriction and selection of the act of speech. The second factor is composed of the message, which is included in the second avatar. Operators determine the degree of the avatars' facial expressions (the percent and speed of transformation – morphing) via the terminal. They also specify the location in space and the rotation around local co-ordinate axes. All operations occurring within the terminal window are performed with the help of a system, which controls the operator's gaze. This means that all commands are triggered at a distance, without the use of a traditional keyboard and mouse, and they restrict the activity to the mere direction of the gaze.

Visual immersion of the viewer will be enabled with the help of polarization glasses. They will be able to experience the perception of computer-generated events as the presence of reality in the spirit of the perception of the third dimension. The performance lasts ***25 – 30 minutes****.*

Computer programming:
Tadej Fius
Eye-movement tracking system:
Iztok Lapanja

Sonic picture: Rainer Linz
*Costumes: Marcela Okreti_*
Graphic design: Davide Grassi, Jo_e Pintar

Production
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Cankarjev dom

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Co-Evolution among Bodies: an Investigation with Brain Signals

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Abstract

This article aims at using a specific artificial neural network , the KSON (Kohonen Self-organized Network), as a means of observing the brain signal patterns acquired as a result of training that network with several visual stimuli subjects induced respectively by observing and imagining a small set of specific dance and daily movements.

1. Introduction

There is a popular supposition among philosophers, still polluted by Cartesian thought, that the brain processes responsible for cognition belong to one category and the brain processes responsible for motor control belong to a completely different one. [1]

However, from the neurobiological and evolutionary point of view, 30% of the fibers that compose the spinal-cortical and bulbar-cortical treatments come from the motor cortex, 30% from the pre-motor cortex and 40% from the parietal lobe, especially of the somatic sensorial area. [2]

Stimulation in the cortical areas, where the spinal-cortical and bulbar-cortical systems originate, immediately produces a different movement. Of these areas, the motor cortex is the best-known. However, there is a supplemental motor area on the medial side of the hemisphere that reaches the pre-motor cortex on the lateral surface of the brain.

Because of this, motor answers are also produced by the stimulation of the first sensorial somatic area in the post -central turn, and for stimulation of the second somatic sensorial area, in the wall of the Sylvius fissure. [2]

In this sense and allied to this point of view, this research used the digital processing signals techniques applied to the interface brain computer (BCI - Brain Computer Interface) to investigate the mental representations, starting from the reflexes of the neural activities that occurred during the observation and imagination processes of the execution of dance and daily movements, in sixteen points on the scalp, distributed among the frontal, temporal, central, parietal, and occipital areas.

2. The experiments

2.1 EEG acquisition

The brain signals were acquired from the two groups of volunteers, formed by five artists and six non-artists, during visual stimuli caused by images of dance and daily movements, and sensorimotor stimuli caused by the thought of the volunteer when imagining himself executing the movement seen.

2. 2 Comparing the brain signals

Two different experiments were carried out based on the results produced by the artificial neural network: from all the available signals regardless of the groups, and from the two groups. The first experiment compared the KSON's outputs produced respectively by three different stimuli processes from the same movement: observation, imagination and basal; the second one compared the KSON's outputs produced respectively by the two groups, i.e. artists and non-artists.

3. Results

Three arithmetic indexes were determined from the results obtained and these indexes led to the following conclusion :

- Artists and non-artists presented different perceptions of the exhibited movements, but the amount of information obtained from those movements, mainly from the daily ones, was more significant for the artists' group than the non-artists' one;

- For certain movements the differences among the observation, imagination and basal brain signals were greater than for others. Nevertheless, there was no clear pattern for those differences which could point to an evident distinction between the dance and daily movements;

- Dance and daily movements are not distinct in the brain processes here analyzed.

Reference

[1] Churchland, Patricia S. "Can Neurobiology Teach us Anything about Consciousness?" In: The Nature of Consciousness, Philosophical Debates, edited by Ned block, Owen Flanagan, and Güven Güzeldere. Massachusetts: The MIT PRESS, 1997.
[2] Ganong, William F. "Medical Physiology", Publisher Prentice-Hall of Brazil Ltd., 1998.

IN CONTACT WITH THE PROCESS: COMINGS AND GOINGS WITHIN DIGITAL ART PRACTICE

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Abstract

The research of the creative activity as a process through which the subjectivity of the artist is constructed led to the identification of periods of non-production, experienced by the artist as 'nothingness'. Nothingness, banality and repetition are explored in this presentation through artworks of Performed photography, multimedia and animation.

1. Main

In the research I carry out at Central Saint Martins College (UK) I am examining the experience of the creative activity as a process of subjectification within digital art.

The process of the creative activity was initially experience as a series of *events*, a connection of *time* and *action*. The frustration of the artist with time not connected with action was expressed in the research diaries: non-production periods were perceived as *nothingness*. An exploration of the gaps in the art production led to the acceptance of this pre-action period as inherent part of the activity of the artist and prerequisite for *action*. Since then these pre-action periods of idleness, banality and nothingness were investigated through the art practice of the artist. Repetition, Performed self-portraiture and exaggerations of the canon of the process have been explored as strategies of the artist.

'Portrait of the Artist as Bored Academic' digital print, detail

2. Methodology

Methodological approaches for the research include self-reflexive methodology and grounded theory. The theoretical background is based on Foucault's manifestation of subjectivity, phenomenological accounts of time and discourses surrounding autobiography and performativity.

3. Acknowledgements

The artist acknowledges the support of the following institutions: IKY, AHRB and The London Institute.

'Banality Queen' digital print

'A Series of Unnecessary Deaths' animation still, animation lenght:1 min

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The Viscous Display: Embedded Mobile Communication Devices

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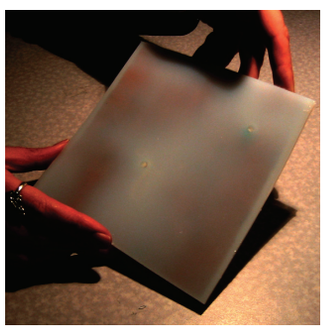
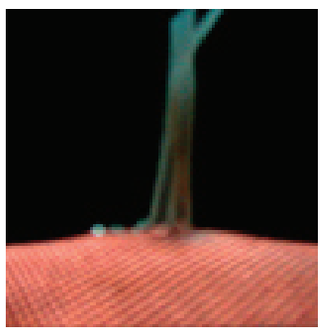
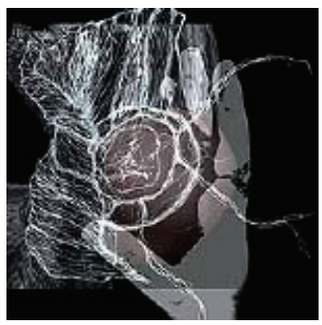

Abstract

The Viscous Display is a mobile communication and display device that learns gesture and color information collected by the user. Inspired by biological systems; the Viscous Display is capable of learning, relearning and recalling a mapping from gestural, color, and corporeal input to express an output of color and motion. Shaped by principles of 'underground public art', the Viscous Display is conceived as a communication medium, where messages can be shared in public spaces. It combines multi-modal sensing, learning algorithms, and a moldable color display.

Keywords

Interpersonal communication, tangible user interface, learning algorithm, gesture recognition, public art.

1. Introduction: Social Histories

In *The Production of Space,* Henri Lefebvre describes space as a social phenomenon where history accounts for the "interrelationships of spaces and their links with social practice"[3]. He argues that the production of space is grounded in natural conditions, where traces of social existence are forever creating histories.

The Viscous Display explores this exchange of social information through transient public interfaces. Shaped by principles of so called 'underground public art' [4], the Viscous Display attempts to similarly occupy and engage shared spaces. When left in public spaces, Viscous Displays are conceived as a communication medium between people sharing these spaces, where messages and signals spanning the continuum between private and shared information can be sited.

2. Implementation: Environmental Traces

The Viscous Display learns gestural motions and colors that form along the traces of a participant's movements, taken from her/his environment and mapped onto its flexible, viscous display. As the user samples colors from her/his environment with an attached camera, the Viscous Display's dynamically responsive, fabric-like interface unfolds visually represented messages. After an initial training process, predictable signals develop from unpredictable environments enabled by the adaptive and temporal behavior of the computational system. The evolving characteristic of these embedded learning algorithms permits the robust transmission of complex environmental messages to this fairly simple computational device.

The Viscous Display has a malleable, sticky quality that enables participants to attach it to many objects. When engaged in public spaces, this interface becomes a tangible transmitter of social histories: a publicly retrievable dialogue, engaging users across an informational space to relay and retrieve messages of another's experience.

3. Physical and Computational Design

The LED based display is made of a copper mesh and flexible silicone encasement to enable bending, folding, twisting and manipulation of this malleable display. Small surface mount LEDs are fixed to a copper mesh to create a full-colored diffuse display. Color and gesture information is captured by three photo diodes and a compact inertial measurement unit [1] that are placed inside an optically clear spherical object, woven via flexible wires to the center of one side of the display.

The training procedure is facilitated by an atomic gesture analysis algorithm, based on a neural gas model [2], that measures gestural motion and color information sampled by the participant. The algorithmic processes are perpetually sensing, learning, storing, and adapting to the environmental information offered by the user.

4. Influences and Related Work

The Viscous Display was inspired by the transient and social qualities of 'underground public art' [4] that attempt to encode shared spaces and engage a public dialogue.

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Data Mining the Amazon: American political parties and their CD recommendations

Angie Waller

Amazon.com is an online warehouse that offers books, CDs, Movies, accessories, toys and electronics to internet-savvy shoppers. Often cited as a model program, this site was one of the first profitable e-businesses in the United States, and more specifically, the first profitable retail-based e-business. As one of the pioneers of e-business, Amazon.com has designed many innovative marketing tools. These tools are often designed to utilize one of their greatest resources —their vast customer database .[1]

One of these tools, **Recommendation Services**, tracks customer 's purchases and offers additional items that match their profile. These recommendations are either based on items from customers with similar purchasing histories or are recommended by professional analysts. For instance, if you like Britney Spears, according to **Recommendation Services**, you may enjoy N Sync, and if you like Roland Barthes you may like Jean Baudrillard. **Recommendation Services** is designed to introduce you to a product you might not have been seeking, but may be willing to buy. This service is similar to the last minute "impulse " items at the supermarket checkout. However, these items are much more specific and personal than a pack of gum or razors. They are catered to your individual consumer desires.

The Amazon.com "community" is firmly rooted in the principles of democracy and equal representation. Amazon.com's recommendations are not biased or sponsored. They are based on artificial intelligence, pattern recognition, and a few educated scholars who know what French philosophers go-well together. Their inventory is seemingly endless and all products enter the system with the same status. Items receive a higher status based only on the individual's previous purchases and that item 's relation to those previous purchases. These hierarchies are necessarily customer-specific. It is as if, in Amazon.com, the market truly does serve you.

Anyone who can type is free to submit a book review. These customer reviews are published in one designated area. Therefore, I, the amateur, could conceivably be published next to a review by Susan Sontag, the professional .[2]

Clearly reflecting the ideals of this country, Amazon.com is understandably a popular web site in the United States. However, a few malcontents have publicly decried the idea of a prescribed cultural consumer, the very concept that contributes to Amazon.com 's great success, but even these people seem to continue enjoying Amazon.com's services and great convenience.

As a result of this huge customer pool, Amazon.com has one of the largest, most diverse databases that can link books to music to DVDs to toys to electronics. It can also highlight popular purchases within specified purchase circles. For example, I recently learned that the movie "A Thin Line Between Love and Hate " is a big seller in the US Army while "The Players Club " is a top seller in the Navy.

RESEARCH TECHNIQUES

I focused on the recommendations that linked books and CDs. If I purchased a book by Stephen King, I would be shown a list of CDs that were purchased alongside the book. I started making different queries and became increasingly interested in music that was purchased with books about world leaders. Some of these linkages seemed arbitrary such as Adolf Hitler's **Mein Kampf** linked to the "Best of the Bee Gees", but some linkages illustrated (although sometimes abstract) a singular sensibility, such as Margaret Thatcher and "A Day Without Rain" by Enya, or Karl Marx and "Solitary Man" by Johnny Cash.

Literally applying the phrase "political aesthetics", I decided to utilize the common distinction of American right-wing conservatives and left-wing liberals to expose what I assumed would be comically contrasting aesthetic sensibilities. I assumed that most people are as opinionated about music as they are about their politics. In other words, linking political books to their CD recommendations, my goal was to find a list of musicians that would best describe each political ideology.

In the beginning, I hit the database with authors and books that I understood as iconic "conservative" or "liberal" texts. Under the "conservative" category, I researched books written by military officials, right-wing radio hosts, and Ronald Reagan. The "liberal " category was consumed with books about labor struggles, the environment and anti-globalization movement. For these texts, the most common musical linkage was the Beatles on the conservative end, and Radiohead for the liberals.

However, I was not satisfied with this method because I felt the book selection was too biased. No matter how objective I tried to be the books I was selecting were based on a preconception of typical liberal or conservative American issues. I decided the best way to collect book titles would be to research what conservative and liberal Americans were actually reading.

With this in mind, I began e-mailing the Bush and Cheney families requesting a list of their favorite books. This was

post - terrorist attacks, so I am sure my innocent question was never read, or else I am being closely watched due to the suspicious nature of such a question. After emailing a few more public figures and receiving no responses, I returned to the Amazon.com web site and typed "conservative" in their search engine. It couldn't have been easier. The query unveiled multiple books and **Listmanias!** made by conservative readers. These **Listmanias!** are democratically styled self-submissions similar to the book reviews. Anyone can construct and submit a list of arbitrarily recommended books. These lists range from 10 to 30 items and are usually grouped by a theme. I focused on **Listmanias!** that selected conservative or neo-conservative or anti-Clinton as their theme. For liberal **Listmanias!**, I selected themes such as anti-globalization, anti-Bush, environment and anarchy. From these lists, I documented book suggestions and later tabulated the most popular from each group.

My results do not make any explicit statement about a political aesthetic as I had, at first, hoped. Instead, the research best functions as an illustration of the free Amazon.com market and popular culture. The top ten choices for both groups are relatively the same. The similar results illustrate how we are unified as consumers. They declare that regardless of opposing political views, we all purchase, and therefore identify with, the same items. Designed to accommodate a fickle market and the most fringe consumer, Amazon.com's inventory is seemingly infinite and truly diverse, yet ultimately, everyone chooses the same thing. Through this activity, Amazon.com is a complete model of capitalism. Outside of the internet, the growing number of chain stores, franchised restaurants and media conglomerates prescribe the publics' choices of where to shop, what to eat and what to watch. When these consumers venture to the vast inventory of cyber shopping they are referred to all of the familiar products supported by the same multi-national ventures. They remain complacent.

The antiquated methods I used for collecting and displaying the data ironically contrast to the cutting edge technology behind the Amazon database. The resulting charts are drawings. Although they contain some human error, they were the results of a system, similar to Sol Lewitt's wall drawings he made between 1968-1993. Before an exhibition, LeWitt sent specific instructions to the gallery installers who then made the drawings. One example was:"10,000 one foot lines that do not intersect." The instructions for my drawings would be "Amazon.com conservative Listamanias and their CD recommendations." Sol Lewitt could have reproduced his drawings infinitely using the same instructions and the results would vary only slightly as the result of humans composing them. Unfortunately, the Amazon.com drawings cannot be infinitely reproduced throughout time as I had hoped. The information used to compose them is no longer available to the public on the Amazon.com web site. Instead these drawings serve another purpose. They illustrate a millisecond of time in the world of e-commerce.

[1] Most of the tools are currently utilized only on the United States site. However, sites in the United Kingdom, Germany, Spain, and Japan will incorporate similar or identical programs after the company standardizes their global sales and marketing strategies.

[2] Certainly, her name may be bold, but it will be no more accessible than my own.

Wegzeit - the Geometry of Relative Distance

Dietmar Offenhuber

TU Vienna / Ars Electronica Center *

Figure 1: examples of videomappings

Abstract

This web3d project explores how the concept of non-linear space - that is space structured by relative units - can be used in VR and architecture. It offers a dynamic view on Los Angeles' structure, radically different from usual architectural representations.

1 Introduction

The project presented here explores how non-linear space - space that is structured by relative units - can be used in VR and architecture. It offers a dynamic view of Los Angeles' structure that is radically different from conventional architectural representations. We usually consider space as being structured by absolute units. A meter is considered to have a constant length regardless of its position in space. However, in our daily life we often use units that are relative in nature: we measure space in minutes, costs or memories. The magnitude of such parameters might be different in different locations in space. The resulting spaces are often difficult to visualize-they might be incoherent, ambiguous and contradictory. The relevance of non-linear spaces has been studied in geography, physics and psychology. Surprisingly, this topic has been widely neglected in VR so far. Space is still being treated in its Newtonian sense as being absolute and unchangeable.

1.1 Describing the City in Relative Space

Wegzeit is also a project about Los Angeles and how it is transformed when brought to relative space. Asking someone in L.A. about the distance between two locations usually prompts a response in minutes. It seems paradoxical that in a city with such a regular, Cartesian layout, people rely on subjective parameters for their spatial decisions. But especially here, perhaps, where the influence of real space is levelled by this regularity, the impact of relative spaces becomes more strongly visible.

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2 Implementation

The project consists of six dynamic virtual environments that propose models of how to visualize three-dimensional relative spaces. They deal with certain properties and effects caused by the nature of relative space such as the asymmetry of temporal distances.

The environments were designed in such a way that they can be used both in immersive VR and web3d contexts. All deformation models are managed by scripted behaviors that are evaluated in real-time. Most of the underlying parameters can be changed interactively.

The creation of the environments involved little modelling; space is constructed by the actual visual perception of the driver. The frontages of the streets examined are represented by long strips of texture that were created from videos taken from the moving car.

The main concern was to use real data from our urban environment instead of working with abstract data sets. One of the biggest challenges in working with non-linear space in VR is maintaining its legibility for the user. Working carefully with internal and external views of the environment, constraining the user's motion to a set of paths, and simplifying interaction are possibilities to prevent confusion in an environment without any kind of static form.

The project can be viewed at http://futurelab.aec.at/wegzeit

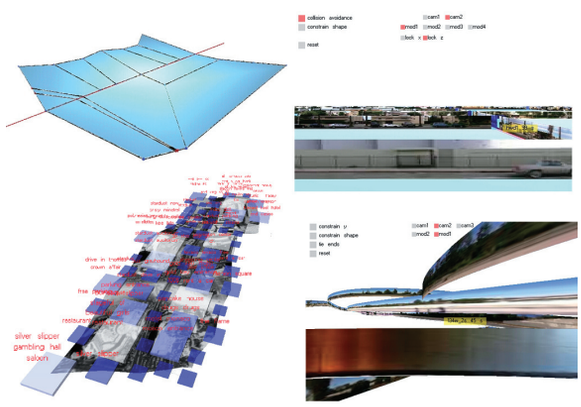

Figure 2: views of the environments

The Trespass of her Gesture – Writing and Writing

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Abstract

This poster session discusses 'The Trespass of her Gesture' – one of the exhibited pieces at ISEA 2002. The piece features a 'virtual graffiti artist' and is textual in nature. The focus of this session is upon viewing the work as 'writing' under the aspect of both verb and noun. That is to say, we may view the virtual graffiti artist as being engaged in the act of writing, or as being a kind of writing herself.

The tendency of the piece to suggest this double aspect places it (and us) onto philosophically interesting ground.

1. Reading Writing.

It should be mentioned from the outset that a piece of work that is so heavily concerned with writing is more than likely to be conducive to reading. My focus delineates a territory – but it often makes sense to roam.

2. She is Writing.

In what sense is she writing? She is producing a series of slogans and sentences which are layered upon the ground. She seems purposive and determined in manner. Serious and centred - the archetypal author.

Usually when confronted with the work an audience will ask questions. These tend broadly to concern identity. Who is the figure? What is the subject of the text?

Our notion of writing seems closely tied to our conception of identity. We expect a text to belong to somebody. We expect an author to be saying something. Our first instincts are at odds with this installation. The figure can neither comment on her text nor explain her activity. The projection is hermetically sealed. Identities are veiled. An attempt to approach the figure hastens her departure. She is forever a stranger – an unfamiliar word.

The concept of ownership with respect to the written word presents many difficulties. We feel that we should write with a full sense of responsibility (in the full sense of the verb, as it were) and yet writing, like speech, has highly spontaneous aspects. We are not always sure where our words will take us.

The Jungian conception of creative activity centres on the notion of the artist as vessel. The writer being written – the singer being sung. Authors often suggest that they become lost in their work - their characters and situations taking on lives of their own. Wittgenstein sometimes claimed that he thought with his pen.

3. She *is* Writing.

When shown in Sofia in its earliest form, there was a stronger suggestion of the figure being 'written'. The work had less flexibility in terms of presentation. It seemed rigid and mechanical. It was in effect a form of typewriter. The frame rate then was slow – mechanical qualities fractured fluidity and grace. In this incarnation the virtual graffiti artist evoked industrial technology - McLuhan's 'Gutenberg Man'. Oppressed by her environment she seemed a step removed in time. It found it hard to read her gestures - harder to respond.

4. Is *she* Writing?

She has always been a spokesperson. Her texts have been gathered from archives, libraries, and tombs. In her first incarnation her words were gleaned from a single source. She was writing as proxy - a stand in for a figure who had long since left the world. Graffiti, in its starkness revitalised the prose.

We have considered asking others to prepare a text for her. Ghostwriting, ghostwritten - a medium in two senses of the word.

Over time she has become more complex – broader in allegiance - more fluidly symbolic. On her last appearance she responded to a series of voices. Past pushing, futures pulling - worrying the moment with a need to have their say.

In the telling of her stories there are tides of predictability. Each word is constructed one letter at a time. Sometimes confirming, sometimes confounding – a play of expectations. Prediction becomes easier with diminishing possibilities – as an idea comes to fruition – as letters find their word.

It is perhaps worthwhile in closing to draw attention to a wider textual frame. Sustaining the projection there is a secondary textual infrastructure. A series of computers follow digital instructions whilst a set of simple sensors read the everyday. Both the observers of the piece and the fleeting passers by exert an influence upon the performance. It is embedded with fragments of a thousand day to days.

Story contains passage, contains sentence, contains word.
Once a gives up its letters we are again at sea.

S. Roberts, August, 2002

Sound Art and The Street

Alexis Bhagat
Artist / Co-Editor, *Sound Generation: Recording - Tradition - Politics*

ABSTRACT

A presentation of works by artists who make critical, innovative phonographic engagement with the street and urban space. Hildegard Westerkamp: "A Walk Through the City" (1981). Ultra-Red: excerpts from "Structural Adjustments" (2000). Infernal Noise Brigade: performance excerpts, Seattle and Prague (1999-2001)

Sound and urban space have both undergone radical and fundamental transformations since the Industrial Revolution. Industry brings new noises of the factory, the whistle, the locomotive; while the new industrial workforce brings together a babble of languages to intermingle on the shop floor and the street of the industrial city. The city that produces these new noises appears like a vigorous new species along the rivers of the earth.

Sound and urban space both face monumental ruptures around the turn of the 20th century: the invention of sound recording and playback, and the invention of the automobile.

Sound recording explodes prior categories of music, already stressed by new noises, turning sound into material- musical material and pure storable, communicable material. Sound recording also makes material of time- makes time a thing which can be played with, altered, folded on itself, stockpiled.

The automobile explodes prior categories of the city, dissolving territory, distance. The automobile also silences, reducing space to a visual surface: what the driver can see.

By mid-century, a profession of planners soon emerges. Planning brings forth in the most industrialized nations a sterilized street. As Guy Debord describes: "Urbanism is ...the preservation of the atomization of workers who had been dangerously brought together by urban conditions of production. The constant struggle that had to be waged against every possible form of their coming together discovers its favored field in urbanism. After the experiences of the French Revolution, the efforts of all established powers to increase the means of maintaining order in the streets **finally culminates in the suppression of the street.** 'With the present means of long-distance mass communication, sprawling isolation has proved an even more effective method of keeping a population under control,' says Lewis Mumford in *The City in History*..." (*Society of the Spectacle 173*.)

Sound art represents a potent means of engaging the street and addressing the alienation of contemporary urbanism.

In the 1970s, **Hildegard Westerkamp** came into contact with Murray Schafer and the World Soundscape Project, a research group at Vancouver's Simon Fraser University (SFU) engaged in "acoustic ecology." (AE) At the same time, she was a founding member of Vancouver Co-Operative Radio, a low-power FM station dedicated to producing radical radio work.

Specificity and *radio* highlight two critical areas of Westerkamp's work regarding space: AE has a special category for "schizophonic sounds," i.e. sounds divorced from their place of production, basically anything coming from a speaker. Westerkamp identifies a continuum of schiz. sounds around questions of coercion and knowledge. One end, ultimate coercive sound, is represented by Muzak, sound intended to manipulate users into behaviors, yet **not be heard.** At the opposite end is a form of sound art which listens to a space, articulates it, and, most importantly, is played back in that space, bringing concealed aspects of reality to the sensible surface. Radio represents an ideal method of distribution for such art. Radio is not unlike the street: a bounded terrain of surprise.

Speaking with Westerkamp, she concedes that the urban soundscape has become dominated by schiz. sounds, so that we now have a *second nature* in sound. And, schiz. sound has become more complex than acoustic ecology can theorize around (Walkman, cellphone, etc.) None of this devalues an articulating sound art, but does point to the need for new theorization on the soundscape, and for engaging the possibilities of radio and sound to create what Henri Lefebvre called "differential space." Kogawa Tetsuo's idea of "Natural Radio" also explores this need.

It is difficult to discuss phonography and the street without discussing photography and the street. As the Los Angeles audio-activist collective **Ultra-Red** states: "Location recordings, despite attempts to conceptualize them as aurally analogous to the snapshot, are unable to examine architecture at the exclusion of dwelling... In sharp contrast, the image has been widely used to wrestle apart buildings from social practice. The history of public housing is fraught with examples where that alienation occurred... Replaced by an image, the community itself undergoes a literal and figurative displacement to make way for a new wave of urban removal..." (Liner notes, *Structural Adjustments,* Mille Plateaux 2000.)

"Ultra-red was started in 1994 as a way of bringing together the activism and sound art/music activities of its members, to put in dialogue these two spheres: social engagement and artistic practice. As the actual membership of Ultra-red has changed over the years, so too has the specific political struggles informing our work." The political work of one member brought the group into a relationship with the Union de Vecinos (Union of Neighbors), a community organization in Los Angeles' Pico Alsio and Aliso Village housing projects, formed in the wake of a Housing Authority plan to demolish 1200 households to make way for a "rebuilding." Given the history of public housing in the US, (rebuilding less units than are displaced,) the Union de Vecinos demanded a guaruntee of return to the neighborhood for displaced residents.

While working with resident-activists of Pico Aliso,both creating artworks, performances and engaged in day-to-day activist work, "Ultra-Red [concluded] that the fetishization of architecture or the image of architecture as a substitute for architecture is not an arbitrary phenomenon... Rather, it is the expression of a specific modality which presumes property in the place of a public sphere."

This valorization of property and commodity exchange locks Western urbanism in mistaken view of the public sphere, i.e. as a **threat.** This belief is codified into a design philosophy known as *Crime Prevention Through Environmental Design* or CPTED, a part of an overall urban strategy of militarizing space, removing the unexpected, unequal development, and hyperpolicing in a visual regime.

Control provokes a reaction. If rhyhtm and song cannot fill the street as the playful exuberance of city life, they will fill it as a confrontation with power. Witness the **Infernal Noise Brigade**, with their drums, their bullhorn wielding singers and their battery-powered NoiseCart, playing triumphantly against capital's arrogance. Formed in 1999, "to provide a soundtrack for the Seattle protests" against the WTO, their beat has gone on, step-in-step with the World Bank and IMF, pulling global power out into the streets, to discover the city and dance in the free air of night.

Simulating Nature:Sound Without Speakers

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Abstract

Widely available advances in digital technologies are enabling artists to work in new ways outside the boundaries of phonography (recorded sound). My own sound installations are one example of this trend, in which sound is generated and controlled by an ongoing process or algorithm, and the use of recorded sounds and even speakers altogether is often entirely avoided iin favor of a more direct "physical" means of sound production coupled with precise digital algorithmic control.

1. Introduction

My work has dealt with the spatial properties of sound for more than a decade. Recently, I have become less interested in the creation of "virtual" sound fields with loudspeakers than in the creation of sounds directly by "physical" means (e.g. the striking, bowing, or the vibration of physical objects with some sort of transducer). These "physical" means of production are controlled by embedded microcontrollers that contain computer programs designed to operate in a manner similar to biological, ecological, and other natural systems. The computer programs create a complex and delicate system of interdependencies between the various sound producing mechanisms which are intended as a direct analogy to natural systems found in the environment around us.

2. Embedded Processes

While there are certainly many historical precedents for this work both in art and in experimental music, the coupling of digital control processes with "physical" means of sound production is a more recent development due in part to the increased access artists have to technology in the areas of electronics, micro-controllers, and personal computers, all of which greatly facilitate the realization of such autonomous, process-oriented works. One of the key technological developments which fueled my own transition from the use of recorded sound and speakers to physically produced sounds was the recent availability of dedicated microcontrollers.

These small computers allow me to construct works that combine a physical means of sound production with an embedded algorithmic control mechanism that is capable of precisely coordinating and controlling the physical production of the sounds. These works are then fundamentally different than installations which rely on recorded media, for in these pieces, the process for making the sounds itself is embedded within the work, rather than the result of some process being fixed onto a recordable medium. I regard the entire system of possibilities and relationships defined within the microcontroller as an *environment* of possible sounds, motions, and actions.

3. "Physically" Produced Sounds

Another important aspect of the installations I will describe in more detail in my presentation is my use of what I call "physically" produced sounds – sound produced by mechanical or other direct means rather than produced via speakers. "Physically" produced sounds are fundamentally different than sounds (re)produced over speakers in a number of ways.

While speakers are designed to radiate sound in a specific direction, most physical sources of sound (for example the buckets in my piece *The Night Sounds*) radiate sound in many directions in complex patterns. This makes them much better suited for placement within a space in situations where listeners will be moving completely around the sound sources. Secondly, I find that the sounds that radiate from uneven surfaces of various shapes, (as opposed to the perfectly shaped cones of speakers), contain delicate and subtle differences from recordings of sound produced by these same objects and reproduced by loudspeakers. Even though it is possible to exactly simulate a sound pressure wave made by an object with a speaker, it is not possible to recreate the subtle variations of the radiation and diffusion patterns of the sound. Likewise, sound waves that are produced by objects with large flat surfaces radiate in patterns that are impossible for "point-source" transducers like speakers to completely recreate. Most recently, I have been experimenting with the use of conventional speakers as well as raw speaker coils and piezoelectric transducers to cause such larger objects to vibrate. This approach is of course is not new, dating back to David Tudor's Rainforest series and other works.

Following these distinctions, my pieces tend to focus on both the spatiality of the sounds, (with lots of smaller sounds distributed and organized spatially), and on the subtlety and details of the multiple sounds which combine in mass to create sound fields that surround and immerse the listener.

4. Investigating the Manner in which Nature Operates

The final aspect of the work I will show in my talk is the nature of the embedded processes themselves. Increasingly in these installations I have become interested in the nature of simulation, and in how our understanding of nature (and natural processes) has been changed and shaped by our ability to simulate them within digital systems. In these works I am now deliberately setting up systems of rules which are based on various understandings of natural processes, and which are linked together in such a way as to create larger systems whose complexity is based upon the interaction of each component, but whose group behavior (as a result of the interaction of the individual components) is vastly more complex in unpredictable and often surprising ways .

In my most recent installations, I am experimenting with the use of embedded controllers in each element of the piece containing a program (encoded process) for generating motion and sounds, as well as simple rules for interaction with other systems like itself. In my most recent work, these individual systems are then networked so that they now effectively "listen" to each other. The overall group behavior then is a result of a much more complex structure which combines the interaction of multiple "individuals," and is much more difficult to predict. In many of these works, the pieces take on group behaviors that are entirely unexpected. In particular two of the works described in more detail in the presenttion exhibit such behavior: *Wire Field,* which simulates simple spatial causality within an ecological environment, and *Scratch Studies,* which is a study in natural vs. mechanical rhythms caused by different kinds of imitation within a group of "individuals."

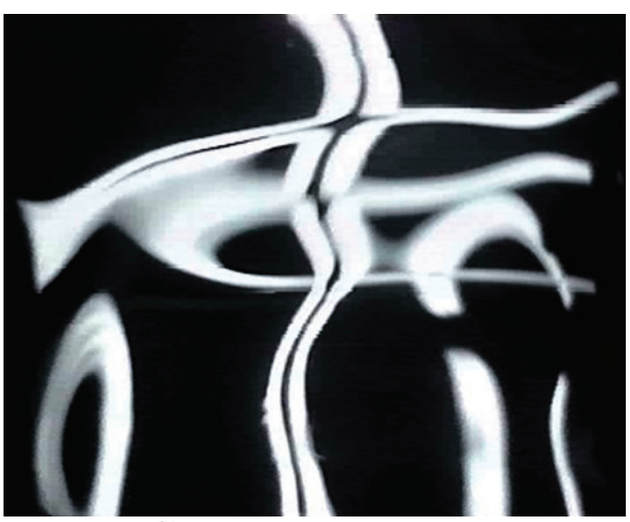
"Aguas Vivas"

Peter Bosch and Simone Simons (boschsim@teleline.es)

Abstract

"Aguas Vivas" is primarily invented to create dynamic, hypnotizing images. It consists of one steel container filled with black oil and mounted on metal springs. The reflections of a light-source on the vibrating oil-surface are captured with a video-camera and projected on a wall.The images vary from orderly patterns to chaotic snatches, while the only sounds produced by the construction are the sloshing oil and some noise from an oscillating motor and springs. At ISEA2002 we show a new version with two simultaneous sound-and-image projections. One projection is "live", the other shows still images captured in realtime from the ever changing visual landscapes, revealing an otherwise hidden world.

Our installations are all dynamic: sound and movement are in constant development. No trickery is involved. It is just the installations playing largely their own game in a fascinating world somewhere between order and chaos. Our influence is marginal over a process that needs both time and rest to flourish.
Ever since the Electric Swaying Orchestra (1991-92, shown at the ISEA´96 in Rotterdam, [1]) sound, construction and scientific background have been inseparable in all our installations. Chaotic pendulums provided the dynamics and the (electronic) music they created was in synergy with the movement. A simple, yet intelligent computer program produced "live" an outcome which for many was recognisable as music. We then moved on to our vibratory projects, in concept closely associated to the Electric Swaying Orchestra, but from the start far more sober and abstracter in construction. Most of these works are sprung box constructions. We began in 1993 with free-standing towers constructed out of stacked boxes. Then came the Krachtgever in 1994/95 [2] which was a wall of vibrating rough wooden transport crates. This leaden, dynamic sculpture, robust of sound and material exhuded some kind of danger that was both audible and visual.



Still image from "Aguas Vivas"

A Castle for Kobe followed in 1996. Cardboard boxes, springs, oscillating motors, resonance and shake away! The beauty of minimal movement and the energy of sound. The power of this installation lays in its apparent simplicity. The installation Aguas Vivas also deals with the phenomenon of vibrations. But simpler than ever. One container, one oscillating motor, 8 springs. Its first version goes back to 1996, being changed and extended several times since then. Whereas most of our vibratory projects, like the Krachtgever and others, are mechanical sound sculptures

Aguas Vivas is primarily invented to create dynamic, hypnotizing images. It consists of one steel container (50 x 35 x 25 cms), filled with black oil and mounted on metal springs. The reflections of a light-source on the vibrating oil-surface are captured with a video-camera and projected on a wall. The images vary from orderly patterns to chaotic snatches, while the only sounds produced by the construction are the sloshing oil and some noise from an oscillating motor and springs. At the exhibition Midivisi (2001) in Hasselt, Belgium, we added electronically processed, amplified sound for the first time. The container, light source (a white neon cross), camera and microphones were located in the same space. In an adjacent space, the video image was projected together with amplified, processed sounds that were captured from the moving container. At ISEA2002 we show a new version of two simultaneous sound-and-image projections. One projection is similar to that described above, the other shows still images captured in realtime from the ever changing visual landscapes, revealing an otherwise hidden world. This visual transfiguration is accompanied by live electronic music, appearing as a kind of "audio-stills". The relatively static second layer forms an mesmerizing counterpoint to the energetic and hypnotizing effect of the other projection.

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Interactive System for Exploring Audiovisual Harmony

Enrique Mayorga
Miguel López
Roberto Torres

Pythagoreans thought that musical harmony resided in common periodicity generated among waves, whose frequencies were interrelated in the same way as small natural numbers. Intonation based on this concept is known as just intonation.

However, today MIDI and the great majority of software and interfaces used for musical creation use the twelve-tone equal temperament as the only universally accepted intonation system. Equal temperament was established around the XVII century as a practical solution to the problem of tuning the acoustical instruments of that time[1]. Nevertheless, the freedom provided by software sound synthesis turns such an intonation criterion into something arbitrary, limiting and confusing. This freedom provides the possibility of creating new instruments and using a different intonation system, that allows us to profit from today's technological potential.

As engineering students we are used to base our comprehension of nature on mathematical models. Therefore, in view of the mathematical simplicity of its essence, we decided to experiment with just intonation in sound synthesis. Working with multiplication and division of frequencies in Reaktor3, we started to explore the infinite resolution of the frequency domain. Through recursive modulations, we found we could travel across new harmonic spaces in a dynamic way. These modulations consist of successive multiplications of the base frequency by fractions made of small natural numbers. In this way, the concept of absolute reference (440 Hz) – implicit in the idea of a tempered scale – disappears. If we apply this concept both to rhythm and tuning, music finally seems to break free of its century-old chains and explore a world of infinite new possible combinations. It also opens the way to a numerical management of tones, allowing mathematics to make substantial contributions to music.

In order to experiment with this criterion, and for the execution of music in real time, it was necessary to create a controller interface allowing to easily configure the number of tones and their spatial distribution by software. To this end, we implemented a scanning laser surface that could be divided in different ways into segments equivalent to strings. The blocking if these light strings is detected and converted into MIDI events. These events then are sent to a computer that generates sound.

The need to work also with images through a purely mathematical language led us to discover that almost all image handling and animation software in our environment targets people averse to dealing with numerical control in their work. This is why in the beginning we developed animations through the Mathematica 3.0 software, the only one available to us using a mathematical language that can be applied to elemental image control. However, this software is more oriented towards engineering and the solution of quite complex numerical relations, and did not offer any alternatives when trying to create interactive visual art in real time together with music. For the last two years we tried to develope simple algorithms that would generate harmonious animations on the basis of iterative functions and numerical management of many parameters such as size, rotation, position, color, etc., of elemental shapes such as regular polygons, lines and points. It was necessary to translate previously developed algorithms to Visual C++ programming language to allow their real time execution using DirectX8.

Finally our group tried to fuse everything together in an audiovisual integration built on purely mathematic principles. It became an interactive audiovisual synthesis system, waiting for certain parameters to be entered via MIDI through a versatile interface.

All the steps involved in the development of the system, from the programming of structures for sound and image control to the electronic, ergonomic and aesthetic design of the interface, have entirely been carried out by the members of our research group of Electronic Arts in an irresponsive environment, out of tune with the true reach of present technology.

References

[1] "**The Just Intonation Primer"**
by David B. Doty
© 1993, 1994 The Just Intonation Network
http://www.dnai.com/~jinetwk/primer2.html

Networked Dramatic Environments

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Abstract

New narrative forms are constantly redefining the relationship between the creators of content and their audiences, who increasingly are becoming the co-producers of meaning. These and the following issues of theory and practice are further illustrated in my recent book and DVD publication New Screen Media, Cinema/Art/Narrative, co-edited with Martin Rieser and published by The British Film Institute (BFI), London in cooperation with the Center for Art and Media (ZKM) Karlsruhe, in January 2002.

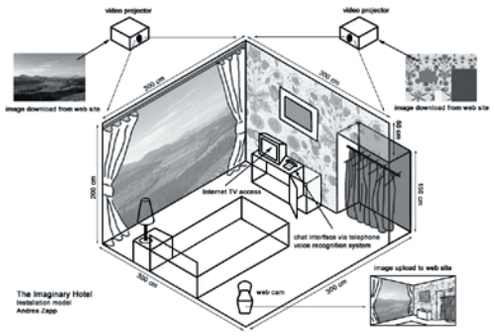
In this context, my own artistic practice and research involves designing narrative models as creative and interactive environments for the user. As an extension of my studies in "traditional" film and media, I try to break from the linear plot line by actively integrating the viewer into the process of structuring the content. The open structure of the Internet offers the most appropriate configuration to play with audience participation as an alternative form that could enrich our concept of media. I am trying to discuss and critically examine issues of interactivity and virtual forms of representations, of the observer themselves and parallel of a dramatic model. Interactive platforms based on a real time networked infrastructure can be designed as accessible environments for the viewer. Content systems can be set up that are actively shaped and further developed through the influence and contributions of participants from various remote locations.

The general idea is therefore to constitute a seamless portal to the net itself as the main source material, making the borders between the individual and the theatrical room less obvious. The following two examples represent recent approaches of mine to these aspects of research on user driven narratives in my artistic practice:

1: Little Sister - a CCTV Drama and 24 hours Online Surveillance Soap

The project is online since April 2000 and still can be found at <www.azapp.de/littlesister>. It combines the potential suspense of live web cam images with closed circuit television and global surveillance camera sequences and is based on over twenty online links to webcams worldwide, observing private and public locations. They represent typical soap opera locations and the viewer is invited to choose their personal casting from a familiar array of urban images. The content is build up by linking to live documentary "found footage" from the web and its hidden user/characters to establish an open-ended narrative, social system and performance platform. At the same time it plays with the notions of voyeuristic media technology and creates an ironic link to the ongoing wave of so-called "Reality"-TV, in which action seems to take place rather in the blind spot in between the images being delivered.

2: The Imaginary Hotel - an interactive installation in a public gallery space, linked to a custom written website communicating with the real room.



This work was first shown in October 2002 at The Chapman Gallery in Salford, Manchester, further interactive terminals were set up at The Cornerhouse in Manchester and The Folly Gallery in Lancaster.

The Imaginary Hotel allowed visitors to occupy and design their ideal room within and fill it with personal content and inspiration. The installation architecture resembled a typical hotel room with its ubiquitous furniture and appliances. In contradiction to the isolated character of such a room though, the walls were constructed as a more open space reminding a theatrical stage and creating a link between inner and outer activity areas. They functioned as projection screens and by choosing image, video and sound footage, sent from the net via the room TV menu, the visitors could then alter the standard interior and even hotel location. At the same time internet users could interfere by modifying or uploading further material through custom coded drag and drop interfaces simulating the room on the actual website and through search interfaces, which collected personal images from their hard disks. All of which allowed an easy and targeted exchange with the room itself. The website further provided a hotel lobby/chat lounge, from which users were able to ring up the telephone in the real hotel room. To achieve this a special web-telephone interface was coded, which transferred text messages from the website into voice on the gallery telephone and the answers back into text. A web cam was streaming real time video from the hotel to the website to constantly document the ongoing changes.

The metaphor of a hotel was chosen because of its given structure of an empty shell, in which the neutral rooms turn into a personal hideaway for a certain period of time. A hotel as such stands for an anonymous social melting pot in a constant state of flux – The Imaginary Hotel further mirrors digital travel in a distorted concept of space and time. It represents a virtual retreat accommodating permanently migrating residents. Similar to a blank canvas, the vacant room is successively populated and shaped by individuals. Real and virtual guests arrive, meet and disappear from out of nowhere and leave their personal traces, reflecting the seamless border between physical and imaginative places of being.

For further documentations of the project please visit <www.azapp.de>.

Do Mountains have a Speaking Disorder?

Professor Karen Kipphoff, Academy of Fine Arts in Bergen, Norway
writes about The Speaking Mountains project by Tulle Ruth.

How sweet to be a Cloud.

How sweet to be a Cloud
Floating in the Blue!
Every little cloud
Always sings aloud

…The bees were still buzzing as suspiciously as ever. Some of them, indeed, left their nests and flew all around the cloud as it began the second verse of this song, and one bee sat down on the nose of the cloud for a moment…[1]

Only in the world of fairy tales and children's stories the inanimate object can and will speak. And more often than not this speech will be in the sense of the *speaking up* of nature, utterings of unasked-for, moralistic, wise and sometimes humoristic comments on the absurd realm of human life and its pitfalls. Nature here takes on the character of the cruel, if clearsighted voice of truth, placing the disconnected adult world of foul compromises, oppressed desires and banal realities in the limelight of eternal clairvoyance. The idea of clearsightedness is connected to the philosophical concept of seeing in order to understand. Given this, it might not be a coincidence that in some fairy tales as well as in Tulle Ruth's work the sense for sound is favored over that of sight. Where sound, according to Plato directly enters our being, thus inextricably linking us up to the world around, the world of images surrounds us and is channeled through the eye. It is simply this romantic search for the eternal and direct link to Heavenly Nature that has lead Tulle Ruth to the complexity of her project. Inventing it as she goes along, Tulle is touching upon a mountain of relevant questions in a more often than not humoristic way.

Speaking Mountains is a varied project of artistic research which, as a result of several workshops, headed towards a complex outdoors sound installation and exhibition in Bergen, Norway and a website aimed to prove that mountains are a part of the world of language [2]. Over an intensive period of 3 years, 1997 – 2000, Tulle investigated the linguistic, sociological, technical, philosophical, scientific and artistic problems of the possible form of speech of mountains. Seeking an exchange with experts in all of these fields Tulle asked the following questions:

- What would the mountains say if they could speak?
- Who are the seven mountains of Bergen?
- When will the mountains speak?
- Can the Speaking Mountains communicate with the Sami/First Nation People?
- Do the mountains have speaking disorders?
- Can speaking mountains communicate with each other?

Speaking Mountains takes us into the difficult terrain of what scientific and artistic research might mean. It's narrative structure allows for diversity rather than following a linear dramaturgy. The visitor is presented with: a digital terrain models communication with a digital language program, the winding song of the joiks of a Sami addressing mountains, the digitally processed speech of various mountains, the discussions of several conferences on the subject, tour maps, bibliography, images. Next matter of Tulle's research: What is the Nature of the Speech of Clouds?

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[1] A.A. Milne, The World of Pooh
[2] http://www.tulleruth.com , vupti@tulleruth.com

HIDING SPACES: A Cave of Elusive Immateriality

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Abstract

Hiding Spaces is an immersive virtual reality work developed for the Cave Environment. By incorporating two dimensional shifting imagery on the walls of Cave with abstract, hand-generated 3D form linked to and flowing out of the walls of the Cave, the authors explore a new approach to the physical space of the Cave virtual reality display. The aesthetic of the work draws on abstract expressionist notions of spatial ambiguity, while making use of the CavePainting software, developed at Brown University, for creating gestural, hand-sculpted form directly within a virtual space.

1. Description

To experience *Hiding Spaces*, a primary participant wears stereo shutter glasses with a positional tracker. Upon entering the Cave, the initial sensation is of entering the space of an abstract painting. Large forms, resembling trees and vines, reach upward and across the space. Flowing without the restrictions of gravity, these 3D virtual gestures twist and change with implied weight, at times even hovering in space as clusters of form.

Surrounding the space are 4 real surfaces (3 walls and the floor). Projected 2D imagery covers the walls in a combination of architectural and organic forms, with varying levels of abstraction.

Colors and textures of the three-dimensional textured forms frequently echo the colors on the wall imagery, and include unexpected combinations of reds and purples, as well as natural greens and browns. The 2D imagery is at times so similar to the textures on the 3D forms that the viewer cannot easily find the boundary between the two. This, in combintation with the changing abstraction of the image, gives spatial ambiguity to the overall work, as elements pop forward and recede visually.

In the view of the Cave below, we see in the left image that the 3D forms contrast with the projected 2D wall imagery, and are more attractive to the viewer. In the second image, the shift in the viewer's position causes a richly colored image to appear on the wall, pulling the attention of the viewer to the back. As the viewer walks toward the wall, the movement is tracked, prompting the ongoing cycle of changes in the surrounding walls and floor.

2. Innovations

Hiding Spaces blurs the boundaries of 2D and 3D imagery. Using the proprietary software CavePainting, developed at Brown University, the artists had the freedom to sculpt gestural forms in response to the 2D projected images, building an integrated work out of the disparate elements. As a result of experimenting with various projections of imagery on the full walls of the Cave, the artists discovered a preference for gradual blending of transitions triggered by the user's movements, as opposed to sharp changes. Color analysis was essential to the success of the blending, so as to avoid muddy transitions and maintain compositional integrity. The interactivity of *Hiding Spaces* is based on the natural and familiar human activities of walking and looking.

References

Keefe, D. et al. 2002 CavePainting: A Fully Immersive 3D Artistic Medium and Interactive Experience, *Proceedings of the ACM Symposium on Interactive 3D Graphics 2001,* J. Hughes and C. Séquin ed., ACM Press /ASM SIGGRAPH, NYC pp 85- 93

Thanks to the Brown University Graphics Group, Scientific Visualization Group, and the Technology Center for Advanced Scientific Computing and Visualization, and to David Laidlaw and Sean Solley for their insights. This work was partially supported by NSF (CCR-0086065, EIA-9871440).

Physical Web Interfaces

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Abstract

Physical Web Interfaces is a concept that attempts to change our relationship to conventional Internet interfaces by providing a framework for bringing virtual processes into the real world. By attaching new physical inputs to things we perceive as truly virtual, we add a socio-critical dimension to the interaction of people and machine. This infiltration helps to augment our understanding of data pathways, explore virtual handicaps, regain control of how we access information, manifest metaphors as real entities, and integrate the Internet into already familiar interfaces. Combining form with function, these projects illustrate how simple interaction can lead to complex outcomes.

1. Themes

Connecting Physical to Online Spaces

Using telepresence as a methodology instead of a means to an end, *Site-Traffic.net* (2000) [1] connects virtual to physical spaces through creative collaboration fostered by two-way telepresence, which allows people in physical and virtual locations to engage in non-verbal networked communication.

Machine to Human

By connecting physical devices to the network, *Crank the Web* (2001) attempts to humanize our interaction with the Internet by turning the process of downloading into a physical one.

Crank The Web (2001)

Extracting Metaphors

Extracting metaphors from Internet usage, *IPO Madness* (2000) and *SearchEngine* (2001) both comment on the glut of Internet metaphors by altering a slot machine to generate dot-com addresses and using a real engine to conduct Internet searches.

The Physical Path of Data

Using physical space as an arena for data visualization, *MouseMiles* (2002) [2] and *SpeakerPhone* (2002) are physical reminders of the movement of information through our environment and how individual virtual experiences can be manifest as collective output in the real world.

Virtual Handicaps

Combining physical clumsiness with virtual handicaps, *LiveWindow* (2001) [3] explores how computers can exhibit physical responses to their environment over distance. The project consists of a networked browser window connected to an earthquake sensor from a physical space.

Internet Meets Familiar

Bringing the Internet into familiar interfaces, *InternetRadio* (2001) [4] and *Tele-Tv* (2002) show how the context of interaction with networked objects can alter how we experience the information they provide.

InternetRadio (2001)

2.Summary

Physical Web Interfaces addresses the possibilities for changing relationships of interaction between information and people across networks. As interfaces shift from the desktop metaphor into new organic forms, there is a realization that humans - not computers - are the ultimate interface. Through this starting point, questions emerge as to how digital devices can integrate human subtleties and real-world clumsiness into their design. By using networks to connect people across distance, there is an emphasis on how individual actions can be manifested as shared experience. Physical Web Interfaces illuminates these realities by bridging the gap between the tangible and intangible qualities of human-machine interaction.

3. Aknowledgements

This research is currently supported by Media Lab Europe and previously by the Interactive Telecommunications Program, Tisch School of the Arts, New York University.

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There's no simulation like home

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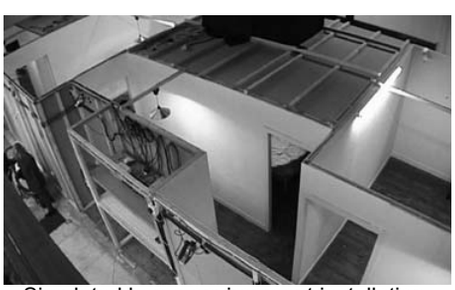
Abstract

This installation links two architectured telematic environments between telepresent video systems. Each space contains several rooms representing the interior of a traditional terraced house. Monitored by web cams, security cams and videoconference cams the two separate audiences/users are able to co-inhabit the same virtual telepresent living environment. "There's no simulation like home" is an installation commissioned for the Event Coast exhibitions, co-organised by Lighthouse and BN1 in Brighton UK. Developed in association with the Fabrica Gallery Brighton.

1: Installation Structure

This installation entitled "There's no simulation like home" is the culmination of artistic telematic research since 1992. The exterior of the installation resembles the back of a plasterboard stage set, or as if the bricks of a house had been removed to reveal the back of the inner plasterboard skin. Electricity and video cables are traced and attached all around the surface of the structure, looking like the back of large circuit board. The installation is architectured on the ubiquitous form of the English terraced house. Using a walk through narrative sequence, from front door to back door, the audience encounter differing telepresent interfaces in each of the four rooms: the living room sofa, the bedroom, the dining room table and the bathroom mirror. Before entering the installation the audience have the possibility to view the installation through a series of peepholes positioned along the plasterboard exterior.



Simulated home environment installation.

2: Installation Interfaces

Inside the installation the audience is encompassed within a simulated domestic home environment, exemplified in the dimensions of the rooms, the wood-chip wallpaper, the light fittings, skirting board and wall sockets. The living room sofa and television screen form the first telematic link outside the installation space, where a second sofa and video monitor are located. By using a system of live chroma keying the two separate people, who could be any distance apart, share the same sofa on the same telepresent screen. In the bedroom the viewer can lie down on a bed onto which a live video projection is being made of another person, who is located outside the installation space on a second bed. A video image of the combined audiences together on the projection bed allows the viewers to interact in a telepresent space by touching with their eyes. The exterior installation space communicates a contrasting image to the domestic interior. Unlike the inside, the technology is very visible - akin to a media lab environment. The telepresent interfaces located on the outside of the installation, appear as areas for interaction and observation of the experiment like situation taking place inside the installation. In keeping with the techno reference of the exterior installation, video images from small surveillance cameras inside are constantly being displayed on monitors outside.

Distant participants lie together in the same bedroom.

3: Installation Conclusion

The dining room table is the third telematic interface to the outside installation. Offering a slightly less psychological complex platform for interaction. By using a system of live chroma keying between two separate tables the remote viewers are able to sit at the same table in the same telepresent room. The final room and interface the audience confront before exiting out the back door, is the bathroom mirror. What initially appears to be a normal mirror lacks one essential truth - the viewers' own image. A momentary illusion that is broken only when the viewer realizes the mirror is in fact a window into an identical room. Whilst we have become accustomed to accept the existence of ourselves in telepresent forms throughout this installation. we are finally denied the most simple telepresent truth we expect from a mirror, putting the notion of the real and the virtual into question. By representing the domestic reality inside the installation as a fabrication of the technological apparatus outside. "There's no simulation like home" attempts to present all realities as a construct of language. This installation serves as a contextual wrapping for the telematic research and developments used within it.

Telepresent viewers share a sofa in the living room.

http://www.artdes.salford.ac.uk/sermon/simulation/

Arte y Electricidad

Arturo Rodríguez Bornaetxea, Natxo Rodríguez Arkaute
Fundación Rodríguez

Abstract

Fundación Rodriguez is an art group that deals with latest art forms. Art and electricity is a project that has been organised by Arteleku, art centre based in Donostia (Basque Country, Spain) and that we, at Fundación Rodríguez, have conceived and coordinated. 20 participants to take part with more than 20 audiovisuals proposals through a process that creates collaborations, definitions and redefinitions of the project itself. ***(A collective experiment, a proposal that's multiform and in process.).*** *Using electronic tools as a starting point but not as an aim, the project has marked its own evolution..* ***(It's a proposal to find new paths of production and distribution).***

1. A&E. Multiform Project

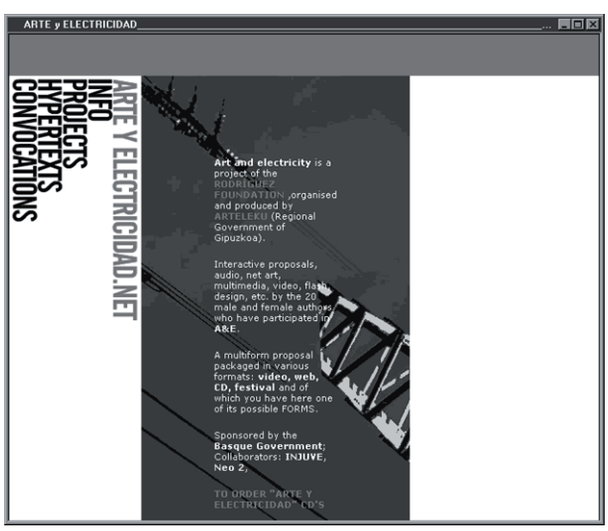
The project is divided in four parts:

- Pack double cd-rom. (pc/mac/audio). Distributed internationally with NEO2 magazine #18 Video, interactive, net.art, sound, design, music, theory, texts, etc by Mauro Entrialgo, Lucia Onzain, Madelman, Roberto Aguirrezabala, Mikel Azpiroz, Mikel Itxaso, Manu Arregui, Gorka Aguado, Manu Ferreiro, Lara Sanchez, Marco Roso, Juan Fco. Romero, María Cañas, Ibon Saez de Olazagoitia, Tim O'Nellin, Joaquín Gañez, Leandro Alzate, Cubo/Iografix, Fco. Javier San Martin, Jorge Luis Marzo, Fito Rodriguez y Natxo Rodriguez.
- Web site, www.arteyelectricidad.net, with full information about the project and all the activities around it. Specific net proposals specially produced for A&E as well.
- Video Program. 60 mins.
- Live presentations: Lectures, djs, projections, concerts, performances, video jockeys, screenings, etc...

Art and electricity is a 'multiform' proposal that suggests the adaptation of its 'product' to the circumstances that are interesting at a given moment, so A&E can be a music session, or a video work, or a music video, it can be a debate… It can be new situations thought up to happen on the net, a personalised vision on the screen or the public projection of a series of audiovisuals proposals, or a series of games… A&E can be all of these things in the form of a launch party, or each and all of them being explained to others in a friendly chat, because the project is like a label that presents itself and its proposals.

2. New Channels

A&E wants to stress new ways of presenting itself, of being distributed, of becoming known, without differentiating between ambits or contexts, but arriving where it wants to be. Our intention has been to redefine the structures of production, diffusion and exhibition trying to insist on the conditions necessary for developing artistic practices linked with the latest trends, in particular with their relation with new technologies. We wanted to complement this activity with some theoretic thought bringing a different vision of creation and technology, as much from experimentation as from its link with the market and publicity, music, the web and design. There is a need for new channels for this work; a need to offer a versatility in the presentation of the work that allows it to arrive at festivals as much as bookshops, galleries, discos, or public spaces… whether they are virtual or not.



Reference

[1] Arteleku Art Center. http://www.arteleku.net
[2] Fundación Rodríguez. http://www.fundacionrdz.com
[3] Arte y Electricidad. http://www.arteyelectricidad.net

Augmented Reality Project: “Mirrechophone” & “Smiles in Motion” ©2000

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Augmented Reality Project - Concept

Artworks as themes of research in the creation of meaning in augmented interactive multi-media. The phenomenon of “interactive multimedia” has experienced a drastic increase in potential in the last few years due to technological developments. The possibility of interconnecting sensors, complex computer algorithms and the many-sided expressions of media is now so great, that the primary interest in fascination with the technology may shift rather to the creation of meaning. In our multimedia set-ups, the computer is relegated to a place where data is recorded, processed and transmitted. We can then be concerned with multimedia in a context of Augmented Reality, with creating spatio - sensory, perceptive and reactive constructs. An interactive multimedia set-up is a world construct, in which everything consists of second hand impressions of different forms of processed transmissions — projections, sounds and reactions as interpretations and translations in a constructed reality. One is never in direct realization, but in search of meanings with one´s own physical presence, in which one´s own senses and actions can conquer, interpret and recognize. What one can do with a computer is generate pre-programmed decisions - artificial intelligence. In order to give a more complex meaning to interactivity than simple reactions to stimuli, an interpretive program should be supplied with opinions, intentions and taste.Things should be constructed with adaptive resistance and its own will, — and this should be recognizable by participants and audience. A simple form of personality with a mixture of fixed reactions and irrational behavior. It is not a question of making artificial intelligence alive, but shifting interactivity from simple reaction to the creation of meaning.

Multimedia as a network of open systems. We intend to develope relations-orientated multimedia works. Works which function in the social realm, in which we as people continually recreate and reinvent our existence — in relations between people. This is “relations technology” as opposed to functional or manifested technology. Open systems in which content and relevance are directly dependant on involvement. And especially in these projects in which multimedia set-ups are a constructed reality, in which experience is created from and with the participants. Beyond the basic senses of sight, hearing and touch, more complex senses such as spatiality, time perception and experience acquire their own significance.We are looking to communication through the body. Communication through action (will, intention, touch)

“Augmented Reality” — part 1 — situation for augmented relationships — 1998-2001. It is through the body´s organs that we sense and act. In this way our being interprets the presence of people and things and brings a certain reality to that presence. Augmented Reality involves the body through the installations presented here, and in doing so, proposes “conversations” at the edge of our normal means of sensing and communicating. In this project, visitors will come into contact with a series of staged and coreographed, high technology installations that can sense their presence. These “sensitive” sculptures are likened to pieces of furniture in a room. But the installations, each in its own way, don´t only sense, they also react. Thus they promote relationships through experiences that may take place at the edge of the senses. In this way, the visitor also becomes involved in an augmenting of what is able to be sensed and is likewise brought to an augmented state of interpreting that experience. In fact, the basic function of the installations often requires that two visitors enter into a relationship and investigate an interpretation of the contents of that relationship. These installations then are situations for augmented relationships.

Smiles in Motion is an interactive pieces of furniture designed for augmented relationships between two people.Two chairs link two visitors that enable them to converse with each other in a very special manner.
This construction might be called a “relation apparatus” and is able to transform speech into movement. Speech and sounds produced in the audible spectrum by the two visitors are converted into vibrations, through motors placed in the seats of the chairs. As a visitor is percieving what is spoken in the form of vibrations, he is also shown the mouth of the other visitor on a monitor fixed in a globe.
The visitors “hear” each other through vibrations, synchronised with the images of the movements of their mouths. And so may converse through vibrations and smiles.

Mirrechophone is an interactive piece of furniture designed for augmented relationships between two people. It is a forum for the exchange of faces and words.
Using complex light settings and a two-way mirror, the visual function of the installation morphs the faces of two visitors, as they look at each other, into a single face, with constantly changing expressions.
The audio part takes words and sentences from each visitor, cuts them into monosyllabic words and sounds and then replays this mix back as a piece of sound poetry. What is said is re-composed into new meanings creating a single conversation through the blending together of what each visitor is saying: augmented relationships through morphing faces and speech.

The Narrative Edge: reconciling fact and fiction

Annette Weintraub
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Abstract

Over the last half-century, the general loosening of the conventions of narrative structure has led to more plastic kinds of storytelling. This has significantly ruptured the margin between fact and fiction. New media enriches and complicates this shift in narrative form by making the movement between hard information and subjective consciousness more fluid. This renegotiated relationship between data and perception can offer new entry points to complex subject matter. This session presents two projects that freely mix narrative styles and which navigate between factual and fictive elements as a way of reconciling information and subjective perception. Both projects employ a range of discursive strategies, scaling from direct presentation of information to first-person narrative in order to construct a more nuanced and expansive exploration of subject. Mirage explores the dissonance between the romantic expectations of travel and the realities of place. Based on a journey to Morocco, Mirage examines the assumptions underlying leisure travel to an 'exotic' location, and the resulting distortion of reality engendered by romantic expectation, embedding ostensibly neutral 'tourist' photos with contradictory narratives and exposing a complex of economic, social, historical and psychological realities. In Mirage, the objective 'reality' of the tourist photo is questioned as the incremental layering of images and information suggest a rather contradictory reality. The Mirror That Changes explores problems of water scarcity and sustainability through pairings of water use in domestic environments and in nature. It integrates a matrix of autonomous factoids and fictional threads pointing to the connection between small scale actions and large scale effects. The Mirror That Changes uses the visual and aural qualities of moving water to create a languid atmosphere in which overtly romantic and lyrical representations of water intersect with narratives introducing issues of scarcity, purity and equity. The Mirror ties a flood of information on water issues with a meandering personal meditation on the nature of water to bring intimate scale to a global problem. Mirage and The Mirror share an approach to new media storytelling in which elements of oral, written and film genres are reshaped, and the resulting mix integrated with a range of information elements. This strategy provides a way of integrating fact and fiction, and multiple sensory inputs in the form of audio, text and moving images within a single narrative envelope.

Annette Weintraub, *Mirage*, 2001

Annette Weintraub, *The Mirror That Changes*, 2001

Fact or Fiction? Or Both?

Over forty years ago, Truman Capote's non-fiction novel, *In Cold Blood*, ruptured the margin between fact and fiction. Its fact-based fiction told the story of a vicious murder on a remote Kansas farm with an immediacy that created a new kind of reportage. More recently, television has blurred the line between fact-based and fictive forms in 'reality' programing, 'reenactments' of actual events and in docudrama. In other media, advertising copy writing borrows the authority of journalism to legitimize its messages; film appropriates the conventions (and language) of advertising. Even as these new narrative forms mix fact and fiction, cross-genre appropriation leaves no genre intact, resulting in a proliferation of constantly mutating genred forms. While fact/fiction hybrids are highly problematic from a news perspective, storytelling which interweaves fact and fiction and plays upon our associations with narrative genres offers an interesting avenue for the construction of non-conventional narrative. One could regard the resulting narrative hybrids as incorporating a compression mechanism that conveys complex packets of information, opinion and emotion and which contain more levels of detail than conventional storytelling. Mixed narrative modes (and hybrid genres) can enhance the understanding of complex material. They provide a means of synthesizing diverse content, making it possible to bridge introspective and external modes of understanding. Information-dense texts, and content conveying multiple viewpoints, or ambivalent readings that evade easy interpretation particularly benefit from this treatment. Hybrid storytelling is well-suited to new media with its non-linear and fragmented narrative structures and use of multi sensory engagement. Our sense perceptions are based upon the ability to negotiate simultaneous streams of information; this aspect of perception can be exploited for narrativity by incorporating simultaneous reading, hearing and seeing. The capacity to follow or ignore particular threads, to dip in and out of a story creates a sense of intimacy, so that the viewer has the feeling that he/she is dropping in on a conversation in progress. When this phenomena is multiplied by using several layers of narrative. looping and variable pacing, the intersections that result create new readings that add emotional complexity and enrich understanding.

Project links

http://www.annetteweintraub.com
http://www.virtualthemeworlds.com/mirror
http://cepa.buffnet.net

Drawing_Archives

Lisa Moren
UMBC

Abstract

[1] "drawing archives" is an interactive installation of 1 to 6 panels, 42x 58" each, made from steel, graphite, blueprints that fade, audio, sensors, and a computer. Voiceover anecdotes have been collected for this digital audio archive of Berliners remembering their East Berlin past. All stories began with memories of the historically fluxuating Friedrichstraße which once paralleled the Berlin Wall to the east.

[2]

[3] In the final installation a viewer approaches a large blueprinted portrait and is invited to draw on it. Like the magnetic head of a tape recorder reading a cassette tape, the viewer will enable the voice of the person whose image they are drawing on. The voice is difficult to hear clearly, therefore the viewer will either be content with random "voicelike" sounds, or they will draw more consciously to hear what the portrait is saying clearly. However, the more the viewer draws audio from the portrait, the more they destroy the image of the person. Eventually the blueprinted portraits will completely fade, leaving only an archive documenting the listeners.

[4]

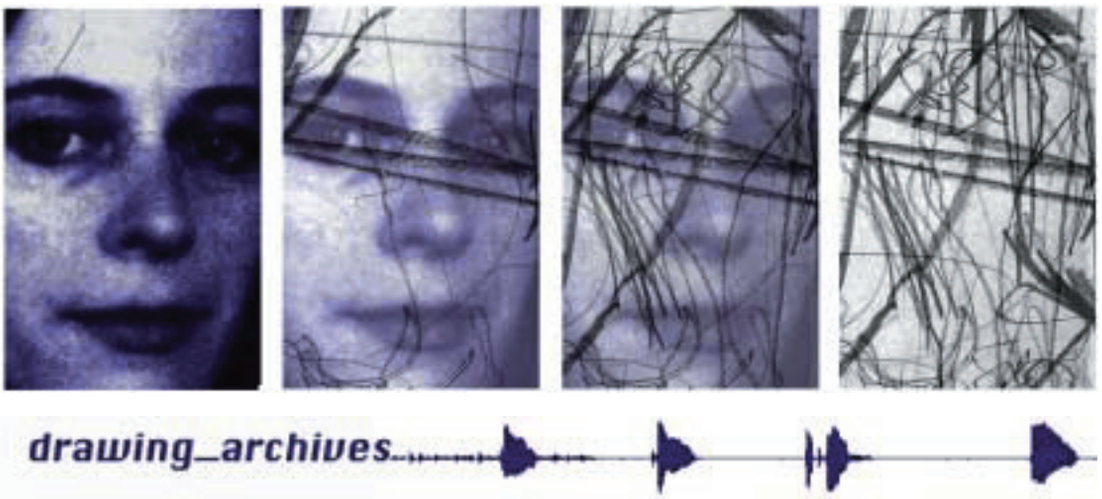
[5] This projected is supported by UMBC (University of Maryland Baltimore County) Designated Research Initiative Fund, Baltimore, MD (DRIF); The Maryland State Council for the Arts, Baltimore, MD; The Goethe Institut, Berlin, Germany; with special thanks to the Museum Mitte von Berlin, Berlin, Germany; and the many interviewees and translators supporting this project.

[6]

[7] For an on-line version of this project see: research.umbc.edu/~lmoren/drawing_archives

[8]

[9] Lisa Moren is an artist whose work is screened and exhibited nationally and internationally. She has been the recipient of many residencies, awards and fellowships including Maryland State Arts Council and CEC Artslink International. She teaches at UMBC (University of Maryland Baltimore County) and lives in Baltimore. lmoren@umbc.edu



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A Map Larger Than the Territory: "La petite Roquette"

Karen O'Rourke
Université Paris 1

Abstract

This paper describes a prototype environment designed to explore possibilities of interactive storytelling.

Children's play is fuelled by stories of all kinds, grounded both in fiction and personal experience. Prolonging episodes drawn from school or home life, books, movies, television, the Internet, they act them out, adapting characters and situations to their own unfolding narrative-in-process. Stories determine to a large extent the way we all live. They allow us to step into other lives or try out new roles; they offer insights, points of view, alternative solutions to the problems life always provides in abundance.

For adults and children alike listening is the continuation of the story by the listener as witness and interpreter, but also as potential storyteller. Each listener builds her own version of the narrative, appropriating what is useful, making associations and drawing connections in order to move the story further, elsewhere. In this larger perspective, listening, telling and enacting stories are all part of the same basic activity. Authors, storytellers, actors, audience members, goal-based behavior, unforeseen events, reactive environments and computer programs may all participate to one degree or another.

My first goal is to set up a dynamically evolving story visitors in different places can explore, enact, annotate, inhabit and extend. They can do this by questioning characters, reacting to what they say, by providing information, choosing a new take on it or by inadvertently provoking response. Drawing on oral storytelling and dramatic techniques from Balinese wayang kulit to Italian commedia dell'arte which combine traditional storylines or situations, stock characters and improvised dialogue, as well as contemporary research on human-computer interaction, games and emergent systems, the project aims to create a real-time story-generating environment.

A Parisian park built on the site of the legendary women's jail, "la petite Roquette" is the scene of three interconnected narratives: a tale of adventure, a "fait divers" and an account of prison life and political engagement. Moving through the garden, we meet characters from the three worlds. We all evolve in parallel lives; each of us speaks our own language. Even the most ordinary conversation involves interpretation, however narrators or prompters can help us negotiate our passage.

The installation comprises a wall-sized baclit video projection of images shot on location and, facing it, an automated jogging mat flanked by two touch-screens on pedestals. An overhead microphone captures sound input. To explore the park, the visitor activates the images by treading the jogging mat. She must choose her own speed and direction. If she gobbles up asphalt, voices may interrupt each other, if she sidles toward someone talking, she can eavesdrop, if her pace is slow and regular, she can engage conversations with passers-by. Any character within earshot might answer. An important aspect of the interface is the speech recognition and synthesis. Voices have a particular timbre; different speakers' prosody patterns reveal personality traits, emotional states. The visitor can converse with several kinds of characters: members of the "chorus" whose remarks have been pre-recorded, genii loci in the form of chatterbots found in various strategic spots in the garden, participating visitors, players, and agents endowed with motives and percepts, capable of learning and evolving. The touch-screens provide alternate ways of obtaining information and furthering the story. When visitors consult a map on one of these orientation tables, they can locate a character or a place in the park, access an on-line conference on the project website. On the other table, they can erase one by one the layers of a palimpsest, wiping through an archive of linked pictures (snapshots, newspaper clippings...) as they search for relevant items.

The narrative will emerge across media out of the actions, reactions and interactions of individual participants as they experience an ever-changing situation, modified by factors both internal (changes programmed over time) and external (previous visitors' input). The story is conceived as a dynamic system rather than a finished object. Theoretically a data bank is never finished: it remains a work-in-progress. The database may be a relatively stable structure, but its contents (objects consisting of both data and program code) are continually being renewed. Here the focus is on the circular process of constituting, organizing, updating and rebuilding an archive.

Can fixed and changing elements be articulated so as to create a dynamically evolving yet dramatically plausible story? Can visitors add narrative developments or construct characters themselves without causing the entire edifice to collapse? Where does one story end and another begin? What about the apparent incompatibility between the database, paradigmatic in nature, and the narrative which is sequential or syntagmatic? Isn't "interactive narrative" an oxymoron? One of these terms totally precludes spectator participation, while the other invites--requires--the audience to influence, modify and even initiate events. Can agents whose responses are generated in real time acquire the depth of character we expect from good fiction? In this era of photorealistic VR simulation, how will human participants deal with artificial characters whose visual presence is only suggested? What kind of stories will be told?

VOICEBOX: Interactive Sound and Video Installation

Sarah Drury
Temple University Film & Media Arts

Project Description

Voicebox provides an intimate voice interactionwithin an enclosed "box" and an exterior amplification of that interaction outside the box. Inside *Voicebox,* the participant has the privacy to utter a peep, a word, a scream or a song into a microphone. These vocalizations are sensed and matched in pitch by audio voice fragments, output on interaction as bits and pieces of a lyrical, multivocal song-narrative. Simultaneously on voice interaction, a video switches between several parallel video sequences, which display on both a large-screen video projection outside the box for viewers and on a small monitor inside the box for the participant. On sustained notes, the participant's live silhouette is keyed in as a third video channel. In this way, the participant "plays" the *Voicebox,* evoking hidden layers of sound and image.

Outside the *Voicebox* , the participant appears to viewers only as a small shadow image, juxtaposed to the large screen projection of the video narrative. Like early silent film accompanists, the participant generates the live musical accompaniment to the moving image. The participant's voice is heard only intermittently, mingled with the amplified audio that it triggers. The narrative takes shape in successive iterations, in the unique vocal patterns and verbal elaborations of each participant.

In this human-computer duet, a story gets told, but just who is it who is telling the story? Based on a Chinese myth, this is a story about a woman who becomes two people and is later re-integrated. In this contradictory paradigm, the reality of fragmentation, loss, alienation and the joy of integration run parallel, neither more true than the other. *Voicebox* invites participants to place themselves in a paradoxical intersection of several story lines and numerous vocal presences, including their own live voice.

This paradigm reflects the dislocated "self" of current digital and communications culture, in which mediation and telecommunications introduce the disturbing concept of a distributed, disembodied, transient, and potentially disintegrated self. *Voicebox* posits an intimate experience of this disintegrated state, reflecting both the current technological moment and a philosophical inquiry into the transience ofidentity. Reviewer Ellen Zweig writes of her experience with *Voicebox:* "Ultimately, as singer and listener, as manipulator of images and watcher, you find yourself immersed in the ecstasy of singing together and the uncanny position of watching yourself become one with the other. And if you sing well, if you hold one pitch longer than the rest, you enter the image and the image fills you with dreams and text."[1]

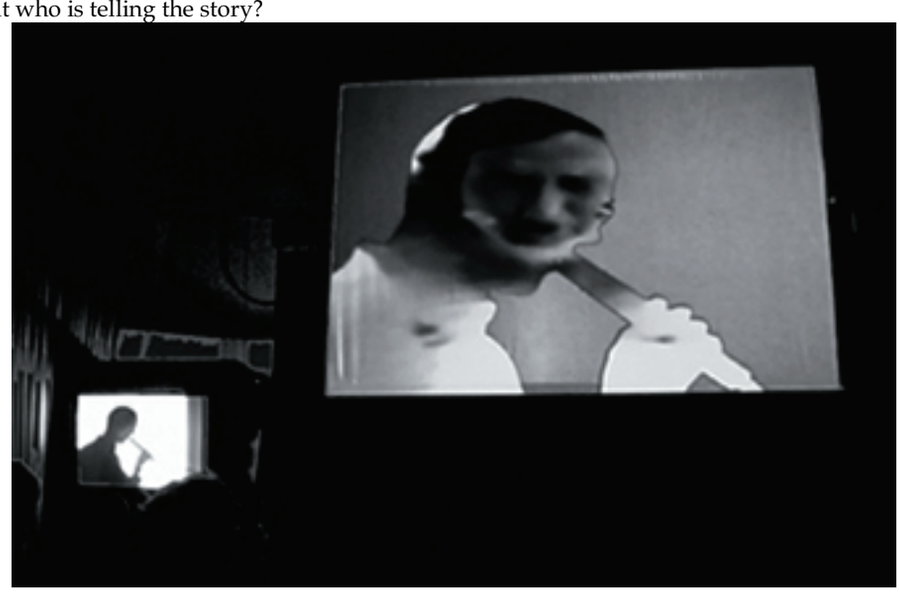
Technical Description

Voicebox uses Max/MSP software to analyze the spectral data of voice input through a microphone, generating output in the following way:

1) audio samples are sequenced for live generation of a lyrical, multivocal song-narrative with both random and linear elements

2) video switching hardware switches between 3 channels, one of which appears when the participant sings a sustained note, causing a video mix of the second video channel keyed through a live mask of the participant's silhouette.

1. Ellen Zweig, *Millenium Film Journal,* forthcoming issue.



Voicebox installation & performance, 2001 (video still: Sonali Gulati)

Rural Ireland, Orai and Art

Hilary Gilligan MFA

Abstract

Visual art production in a space between the fixed points of fine art and public art. Performance, installation, multimedia and collaboration are employed. An artist from the north west of Ireland embraces the meaning of the japanese word Orai.

My story about "coming and going" begins in 1895 when my grandmother was born in the West of Ireland. She and her husband emigrated to Toronto, Canada to make money. After the First World War, the Civil War in Ireland, saving money and having four children, they returned. Most emigrants did not. I grew up on the farm they bought. It was the 1960's and 70's in rural Ireland. We were a developing country. There were no traffic jams, no highways, but we got the television and the telephone. In the 1980's I went to art college. Then, like most young people of my generation, I emigrated. Except I went to the New World looking for my roots.

Throughout my years at Ontario College of Art, Toronto I created installations/performances that referred back to my Irish cultural heritage and my interpretation of the New World. I wanted to investigate myself, my society and my history. My interest in commenting on, contributing to and constructively criticising lay with the place and the people I knew best.

I returned home to the West of Ireland but felt claustrophobic. "Choices" was my first live art work in a public space close to home, in 1990. The river and bridge in the centre of the town formed the performance area. Live and pre-recorded sound was utilised. Protestors were planted amongst the audience. References to Christianity included leaving boxes of apples on the bridge inviting the audience to eat or to throw them. In this instance the artist underestimated the collective consciousness of an Irish public audience and was in danger of being "stoned by the apples".

Several years later while pursuing a Master Degree in Fine Art at Belfast, you would always find me surrounded by "minders" when creating live art in public spaces.

I now work with the public and the community in a variety of ways. On a consultative and voluntary basis with local authorities and arts organisations. As an educator and lecturer with the local Institute of Technology, Sligo. As an arts practitioner with community groups. As a professional artist through selected exhibitions and public art commissions.

Road building has funded numerous public art projects and continues to provide employment for many artists. Our improved road infrastructure and reductions in air transport costs has made it easier for an island nation to keep in contact at home and abroad. I returned to Canada 1999 to create a holographic image for a public art work permanently installed outdoor in Ireland. It refers to our first settlers four and a half thousand years ago.

Currently, the development of an electronically networked society has made it possible for artists like me to live and work in rural Ireland. Returning to practice art in the quiet scenic countryside, I find that traffic jams are now a reality and telephone poles obstruct my view.

My art practice has embraced the available, affordable technology. Digital imaging and information and communication technologies are now integral to all my projects. Currently I am developing a multimedia art work based on "the last of the seven sons and daughters". These people have the gift of healing, but as the Irish family profile has changed, they are being lost to our society. I employ modern electronic technology to capture the last moments of a pre-modern Ireland.

Telegraph poles communicating in my Irish landscape

Institutional Presentations

Coming !
Questions and discussions around the theme :
moving image / architecture / public space

Abstract

The Swedish-Japanese exchange project - coming! - is a continuous discussion and an implementary action project setting out to formulate visions concerning moving images in public space.

Coming! will be accomplished through meetings and talks with artists, technicians, architects, writers and others involved in the development of public space.

The project aims to present art works throughout the Stockholm cityscape in 2004 exploring different aspects on what is a crucial, and contemporary, democratic issue.

Coming! will offer open visions concerning all those important city "rooms" we all visit every day:
in buses, schools, airports, stations, streets, daily papers, on the internet, on the billboards and so on.

Coming! will also complement these ideas by editing a publication capturing the discussions, visions and settings for future public space.

Coming!
august 2002

Coming!/Filmform projectgroup consists of :
Jannike Brantås-curator, Helena Byström-artist, Hitomi Hasegawa-curator,
Åsa Lipka Falck-artist and Carina Törnblom-curator.

www.coming.nu / www.filmform.com

Introducing The Media Arts & Technology Inter-disciplinary graduate program at the University of California, Santa Barbara

George LEGRADY, Stephen POPE

The Media Arts and Technology Program (MAT)at the University of California, Santa Barbara (www.mat.ucsb.edu) is an interdisciplinary and interdepartmental graduate degree program that offers the Master of Sciences and Master of Arts degrees in Media Arts and Technology. We are currently in the process of developing a PHD doctoral program. MAT provides the UC system with a unique cross-college graduate program available to students with an interest in media arts and technology. MAT serves as a focal point for multimedia education, engineering, research, and artistic production.

There are three areas of emphasis:

1. Multimedia Engineering

The Multimedia Engineering emphasis is intended for creative engineers and computer scientists seeking a comprehensive program in multimedia software design and implementation. Students will learn several programming languages and software libraries, and be involved in the development of large-scale software systems. Second-year courses include in-depth work on multimedia programming tools, and the development of complex signal processing software systems. This path terminates in a Master of Science Degree.

2. Electronic Music and Sound Design

The Electronic Music and Sound Design emphasis focuses on contemporary electronic music composition or sound design and digital audio engineering. It is intended for technically-inclined musicians. Courses will include private composition lessons, lessons in computer techniques, and composer's seminars, as well as directed work on various music production systems. During their studies they will present a recital or intermedia production. This path terminates in a Master of Arts degree.

3. Visual and Spatial Arts

The Visual and Spatial Arts emphasis is intended for technically-inclined students with an interest in the visual and performing arts. Courses will include training in the history of art and computing, video and installation art, dynamic web design, and intermedia production. Advanced courses will be given in the 3D environment, on-line community, on- and off-line installation, and virtual systems theory. This path terminates in a Master of Arts degree.

FACULTY:

Research and professional interests of the faculty
All of the faculty involved in MAT come from an interdisciplinary background. They appreciate the need for a program that not only encourages, but depends upon actively crossing over traditional disciplinary boundaries.

The CICV Pierre Shaeffer

(no paper available)

Net_Composition
A creative research & study project at CM&T

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CM&T >> Centre for Music & Technology
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Abstract

Project Net_Composition is divided to two programs: an academic research program and a composition study seminar. The student team of CM&T at Sibelius Academy, the only music university in Finland, is conducting, under my direction, a unique 2-year artistic research and study project in collaboration with other Universities in Helsinki. This paper is the introductory overview with relevant URLs as references. It also introduces CM&T in short.

1. Introduction

"Networks, we are told, give us new possibilities. They change the way we communicate, the way we work. It is currently changing the way we make music. But does it change the music itself? "*Atau Tanaka 1999.*

Many interesting new music and sonic works that are only possible to be created in computer networks environment and that especially utilize imposed constraints of network communications technology have recently emerged. A creative research project, Net_Composition targets to collect all these works, to database them, to study each technology being applied and to analyze their new musical ideas and esthetics. The project also aims at composing fresh Net_Compositions by the project team, by individual student as well as by myself, the project director.

2. Research

Collecting available Net_Compositions is our first task. There already appeared on some web portals that introduce Net_Compositions: Crossfade and Audio Hyperspace are to name a few. However “ordinary” music works that use the network simply as new delivery means are excluded. They are not considered as Net_Compositions. Thus an important part of the research involves analysis as to what are Net_Compositions and to what are not. There are various Net_Compositions depending on their ideas and technologies that are evaluated. Another important task is to database them according to their styles. They would be filed in sophisticated database system and would be available to be “listened” on the Internet.

3. Compositions

Starting from March 2002, 11 students from various universities such as The Sibelius Academy, The University of Arts & Design in Helsinki, The Helsinki University of Technology and The University of Helsinki have started to produce fresh Net_ Compositions. Each composition uses a different technology such as PERL, Jsyn, QuickTime Streaming, Max/MSP, FLASH etc. as each basic compositional idea is rather different.

4. On-Line Study

Net_Composition, in the summer of 2003 will be scheduled to join MOVE, a virtual university program in Finland as an on-line study program open to all students and public in Finland.

5. CM&T at Sibelius Academy

'In 1998 the Sibelius Academy (the highest music educational institute and the only one in Finland having 1500 students) took the historical step of launching a widely based, 5 year Master of Music program in music technology. In the process, a new department was established by merging the computer music studio SACMUS with the new teaching program and linking in staff working on applied research projects. In English the new department carries the name Centre for Music & Technology. The aim of the course is to provide a lot more than a sound engineer's education: it is so ambitious, in fact, that we hope that, once the students graduate, they will be able to work sovereignly in many areas where music technology is applied and actively mold our technological environment to the betterment of music. The basic pillars of the course are musicianship, a strong theoretical and practical foundation, and research and documentation.’ DR. Andrew Bentley, senior lecturer at CM&T.

Reference URLs (http://)

[1] Net_Composition >> cmt.siba.fi/skanki/net_composition
[2] Compositions by students >> cmt.siba.fi/skanki/net_composition/projects.html
[3] Compostiions by Shinji Kanki >> cmt.siba.fi/skanki/net_composition/mynetcomp.html
[4] CROSSFADE >> crossfade.walkerart.org
[5] AudioHyperspace >> www.swr2.de/audiohyperspace
[6] CM&T >> cmt.siba.fi
[7] Sibelius Academy >> www.siba.fi
[8] Shinji Kanki’s homesite >> cmt.siba.fi/skanki
[9] Finnish Virtual University >> www.virtuaaliyliopisto.fi
[10] MOVE >> www.jyu.fi/move (in Finnish only)

Nihon – A Project of Bauhaus-University Weimar

Dipl.Ing. Peter Benz
Bauhaus-University Weimar, Germany

theory

the media faculty of bauhaus-university weimar was founded in 1997 and offers the programs “media culture”, “media design“ and “media systems”.

especially because of its fashionable and economic cyclical obviousness a media faculty brings up questions about its matter of object and its profile. does the term “medium” paradigmaticly refer to television, or to the computer as an universal tool? is journalistic interpretation the key issue of the study, or is it a branch of computer applications and design? how are the relations between topics such as independent film-making and strictly applied screen-design, or the development of high-tech solutions compared with administrative services, or the historical basic knowledge in comparison with program planning and media pedagogic attempts?

always considering general issues of the functions of the university in an era characterized by the media, the faculty achieved its very own structure. this is based on three general key issues:

study focus on the field of basics and conceptional solutions: students will work on exemplary, selected and basic problems. they will develop and test new solutions which include design tasks as well as technological and scientific tasks. our goal is the achievement of competence in methods and innovation. according to that, we want to educate independent innovators and conceptionists instead of communication machinists or people who only realize other people’s ideas. at the same time this enforces a project structure in teaching which secures an examplary work on open, unsolved problems from the beginning of the study.

study focus on the integration of tool and task: science and design through (or by the help of) media stands in close connection with research and design of the media and media processes themselves. media are reflected and treated as tasks and as solution conditions. this results in a new understanding of a media school: teaching and research have to be defined again to include correlations between media and their tasks. this for example relies on fields of study such as “multimedial narration”, “media events”, “trends and public appearances” or “design of medial environments”.

study focus on digital convergence: the process of digitalization attracts special attention, since it effects all fields of media and culture. this refers not only to the survey of skills that focus on the handling of digital tools, but also to conceptional tasks in media development which analyse the effects of digitalization on present structures in media application and media historical research which discuss digitalization as well as the relation between independence and the influence processes between different media.

example

in the summer semester 2002 the media design course offered the project “nihon“. the students were given the opportunity to occupy themselves with all different aspects of japan, the japanese way of life, the japanese media scene, japanese culture (contemporary and traditional) or german-japanese crosscultural communications. from their experiences they then developed different works – sometimes art, sometimes applied design – in which they try to reflect what struck them as important, remarkable or simply fascinating.

with “nihon” as an example of work we intend to introduce the media faculty and its special ways to a broader public in japan. you may see the following pieces from the project “nihon“ during the ISEA at our exhibition at the Gallery Plannet in Nagoya.

works

Sebastian Seidel: *moving around frequencies*
a microphone and a variable audio source, both connected to a mini fm-transmitter allow us to enter japanese radiospace in addition to what we perceive from being in the ‘real’ world anyway. we will be present on a virtual level, a level that abolishes distance and substitutes it for interest. moving around (in and on physical and virtual frequencies) means to be in constant touch with the city, its places and its people. [*radio installation*]

Kathrin Schaefer & Dana Hofmann: *title: 912 773 80–413*
the closer you get, the more you see. or not? an installation that occupies itselfs with uncertainties of human relations and the effects of foreign influences on, confrontations of and projections on different personalities. [*video installation*]

Christine Jahn & Sabine Streckhardt: *made in germany*
how is germany perceived abroad? the biggest cliché, germans have to struggle with, is bavaria. but obviously not all of us are bavarians. how does the german way of life really look like? on a cinematic trip we collect impressions. [*experimental documentary*]

Patrick Junghans: *my little friend/child of the past*
a serie of manipulated photographies, a serie of deaths and a serie of a savior. [*printed photos*]

Martin Kleppe: *mutations and uncontrolled growth*
experimental programming, that uses clean and simple code and mathematics to generate complex and congested visual shapes. the piece draws its inspiration (on an abstract level) from the famous akira manga. [*animation sequence*]

Sebastian Gerbert: *iltomaniac_experimental urban tools*
iltomaniac is the concept of a fictive company and its products. iltomaniac aims to develop smart tools for the daily life in an urban environment. these experimental urban tools deal with present conditions of life in a modern metropolis, like the loss of nature, the speed of life and the lack of space. [*website*]

Max Schreiner: *tamagotchi social club [human body installation]*
do we care about technical humans? what happens when a technical construction can feel, hear and see? is there place for handicapped products? general task: will a technical construction survive, if it has human needs?!

Mirko Kubein & Matthias Weber: *hanging on a telephone wire*
a piece about how we are connected when we’re talking on the phone and how we lost touch. [*installation*]

Thomas Geißler & Klaus Viehoefer: *doitsu TRANSFORM nihon*
this piece reflects the image we have of japan and places it in our very own environment. this work plays with different ideas, images and prejudices and shows what happens when two imaginations collide. [*video /3D animation*]

CAiiA-STAR

Founded and directed by Professor Roy Ascott, CAiiA-STAR is a world-wide transdisciplinary research community whose innovative structure involves collaborative work and supervision both in cyberspace and at regular meetings around the world. It combines, as an integrated research platform, CAiiA, the *Centre for Advanced Inquiry in the Interactive Arts* established in 1994, at University of Wales College Newport, and STAR, the *Science Technology and Art Research* centre, established in 1997 at the University of Plymouth. CAiiA-STAR has the aim of creating new knowledge through research in the theory and practice of interactive art , and is recognised as a leading centre in this field. CAiiA-STAR has a transdisciplinary perspective which seeks the integration of art , science, technology, and consciousness research within a post-biological culture, and is involved in advancing the parameters of this emergent field (e.g. telematics, immersive VR, Mixed Reality, Alife, architecture, hypermedia, telepresence and agent technology, transgenics, data imaging, intelligent environments, generative music, technoetics). It is a community of closely connected doctoral candidates and graduates, post-doctoral researchers, advisors, associates and supervisors. These high level professionals are committed, through collaboration and shared discourse, to pushing the boundaries of their art. For these reasons the level of research is extremely high and the methodologies employed are extensive and rigorous.

Research is conducted online and at three mandatory ten-day face-to-face *Composite Sessions* each year, involving individual tutorials, research seminars, critical round tables, and a public conference. Online candidates are required to attend all nine sessions over three consecutive years. The Centre is regularly invited to hold its Composite Sessions at universities and media centres abroad. These sessions and conferences have been hosted by *Artspace Media Centre*, Dublin (1997); *La Beneficia Cultural Centre*, Valencia (1998); *CYPRES,* Marseilles (1999); *Federal University,* Rio de Janeiro (1999); *University of Arizona*, Tucson (2000); the *Ecole National Supérieure des Beaux-Arts*, Paris (2000), *Fondazione Fitzcaraldo*, Turin (2001), *Universitat Oberta de Catalunya*, Barcelona (2001). *University of California DARNet*, Santa Cruz and Los Angeles (2001). Additionally, CAiiA-STAR initiated and co-sponsored the international conference *Invenção* in Sao Paulo, Brazil (1999) in collaboration with the *ITAU Cultural Centre*, the *International Society for Electronic Arts* (ISEA), and the journal *Leonardo*. Its meetings during 2002 are scheduled for *University of Arizona*, Tucson; *Curtin University*, Perth; *IAMAS*, Ogaki, Japan.

In addition to reports to their supervisors, doctoral students are required to submit progress reports to the University Research Committee (UWCN or Plymouth according to their registration) at regular intervals. Principal amongst these reports, and additional to annual progress reviews, is the *Transfer Report* (3,000-5,000 words) which, accompanied by an External Assessor's Report, is presented the the University Research Committee, to support the transfer from MPhil to full PhD status. After a minimum of three year's full time research a candidate is eligible to submit a thesis for Final Examination, which includes a *viva voce* examination. The final submission may consist in either a written thesis of between 80,000 and 100,000 words, or a thesis consisting in two parts: a digital portfolio of practical work which has been initiated, researched and developed exclusively within the research period, and a *linked narrative* of no less than 35, 000 words. The Examining Board includes an External Examiner (appropriately qualified and experienced in the UK at the doctoral level), an expert from within the University, and an independent Chair. Full time students may be either *onsite* (permanently resident on campus for three academic years) or *online* (committing 30 hrs of research per week at their home base, and attending three *composite sessions* (see above) per annum over a three year period).

The CAiiA-STAR International Research Conference *Consciousness Reframed: art and consciousness in the post-biological era*, has been held at the Caerleon Campus of the University of Wales College Newport in 1997, 1998, and 2000, on each occasion attracting over 100 presenters from more than 25 countries. Additionally in 1998, an International Workshop *The Architecture of Consciousness* was also convened at the University of Plymouth. In August 2002, *Consciousness Reframed* was held in Western Australia, hosted by Curtin University, Perth. The Conferences may be seen to parallel, from the CAiiA-STAR perspective, the bi-annual *Towards a Science of Consciousness* conference at Tucson, to which CAiiA-STAR members regularly contribute. The CAiiA conferences have resulted in the publication of two books: Ascott, R. (ed). 2000. *Art Technology Consciousness*. Bristol: Intellect Books. 234 pp. ISBN 1-84150-041-0, and Ascott, R. (ed). 1999. Reframing Consciousness. Exeter: Intellect Books. 314 pp. ISBN 1-184150-013-5. Professor Ascott guest edited the Special Issue: Computers and Post-Biological Art, *Digital Creativity*, 9,1. 61pp., and with Dr. Punt published A Speculative Bibliography of Art and Consciousness in *Convergence*, 4, (3), pp. 116-134. The 1998 CAiiA conference in Valencia, Spain, resulted in a bi-lingual book of essays by CAiiA researchers: Molina. A & K. Landa.(eds), 2000. *Emergent Futures: Art, Interactivity and New Media/ Futuros Emergentes , Arte Interactividad y Nuevos Medios*. Valencia: Institució Alfons el Magnánim. pp.108. ISBN 84-7822-326-6.

Rhizome as Social Sculpture

Mark Tribe
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Abstract

Rhizome.org is an online platform for the global new media art community. Our programs support the creation, presentation, discussion and preservation of contemporary art that uses new technologies in significant ways.

In the 1970s, Joseph Beuys used the term social sculpture to describe a kind of participatory art work in which speech and ideas are raw materials in creating a transformative social space. Beuys' notion of art as a social practice--even more radically expansive than Alan Kaprow's interest in blurring the boundaries between art and everyday life--remains largely a theoretical construct, a goal many artists strive for but rarely attain. It is nonetheless a useful lens through which to look at things...

In 1996 I was living in Berlin, Germany. I had a day job as a web designer and was making net art in my spare time. Those were heady days and Berlin was teeming with people like me--young artists who were fascinated by the Internet and its potential to liberate art from the bounds of real space and the old school institutions that existed there. I also knew from my trips to Ars Electronica and other new media art festivals that we were not alone: the net art meme had replicated globally. So I started an email list for the discussion of new media art and called it Rhizome, a term Deleuze and Guattari use to describe horizontally distributed, non-hierarchical networks. The list grew quickly, and soon took on a life of its own.

Today, Rhizome.org is a nonprofit organization based in New York City. Through our web site, email lists, commissioning program and events, we support the creation, presentation, discussion and preservation of new media art. We have five people on staff and over 13,000 members in 118 countries. We get funding from various private foundations and government agencies and from hundreds of individuals around the world. Although writing grants and doing budgets doesn't feel like art making, I have come increasingly to see Rhizome.org as social sculpture and thus as art. In this case, electronic speech and code are the raw materials in constructing an online social space that is less hierarchical and more meritocratic than the mainstream art world.

Lunches Tender: Live Media Manipulation as Performance

Paul Chan, Rania Ho, Tarikh Korula
Frenz4eva
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Abstract

The art-tech collective, Frenz4eva, engages in the manipulation of digital and analog media in a live audio/video mix performances. Through the exploration of marrying old and new media and the integration of live performance, our creative process addresses consumerism in the digital age. Our work dismantles the passive relationship of consumer to product by re-envisioning technology and media as active elements in a larger, collaborative and deeply personal live narrative.

1. Theme

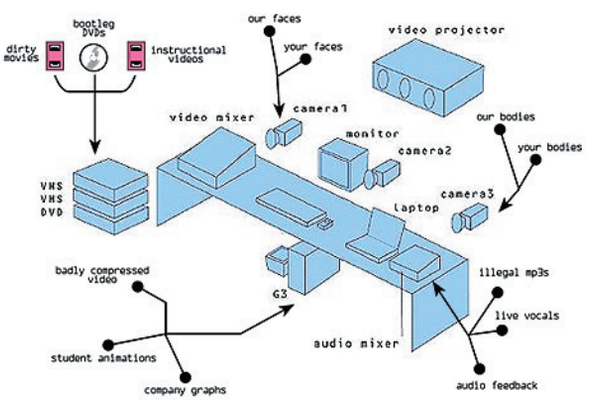
Using discarded VHS tapes, promotional videos, work out tapes, political films, commercials, web video, surveillance footage, protest video, student animations, video game sound effects, soundtracks, television theme songs, field recordings and intimate conversations as source material, Frenz4eva layers and splices these found-object video and audio segments to create a textured deconstruction of the collective mediated environment. We are fascinated with media that permeates the public sphere. Using and reappropriating these sound and video elements turns the tables on our passive consumer-centered relationship with the media and allows us to re-envision and re-create our visual and audio landscape. From digital video and MP3s downloaded off the web, to found instructional videotapes, Frenz4eva's mix performances explore the relationships of these disparate media elements to each other. We mine the depths of live experimental video and electronic music uncovering an embarrassment of technological riches.

We limit our resources to commercially available technology and media, from camcorders and VCRs to sampled sound and found footage. Our live compositing process is informed by the tradition of DJ-ing as it was first forming in the parks of New York City's ghettos. Here too, technology played a crucial role. The re-purposing of the sound mixer by Jamaican artists found its way to New York and gave local turntablists the ability to control an uninterrupted stream of sound that inspired new forms of poetry and dance. Frenz4eva draws inspiration from these early pioneers. However we are we are less interested in hip-hop's increasing trend towards commerciality than we are interested in the techniques and process of media manipulation.

2. Program

Each mix performance is a unique, rehearsed yet heavily improvised event that is impossible to replicate. Our early experiments with improvisations on surplus digital electronics equipment have led to intricate and sinuous performances. To date, Frenz4eva has created 4 different mix pieces: "Meat of the Century", "Al Sharpton, Warts and All", "Witchcraft Through the Ages" and "Space". These title themes are addressed both literally and metaphorically in video, still imagery and sound.

Frenz4eva will perform a live video mix.



The utmost in shaping ... is to arrive at no ascertainable shape
The Culture of Immanence

Ricardo Barreto and Paula Perissinotto

Organizers of the FILE international festival of electronic language

Although as yet unnoticed by some, a radical change is beginning to take place in world culture that will astound even the most learned. Profound changes are occurring within postmodern societies and giving rise to transformations that will have unpredictable and immensurable consequences. We are on the threshold of catastrophic events, with paradigm changes that defy definition. Previously solid institutions, groaning under the weight of historical tradition, may well be blown away by cultural storm winds. In every discipline – from mathematics to the arts, from biology to economics - we see profound modifications in our feelings about the preconceived canons, and we are heading for a generalized state of crisis in contemporary culture. We still see the world from the historical vantage point of the culture of transcendence, although its dominance is now being challenged. From Plato's Ideas and Aristotelian metaphysics, to the Hobbesian Leviathan, through to the teleological ideals of modernity, the culture of transcendence has imposed its univalence and supercodification on institutions and cultural trends emerging within them, thus flattening all their cultural features. It took part in every type of sovereignty as it constituted and consolidated its power through cultural institutions: academies, museums, and universities. The culture of transcendence was a culture for the "few" to the detriment of the "many". However its modern version is for the masses, it functions in the interests of capital and has invented cultural dissimulation, the perverse allure we call culture of transcendence for the mass. This mass media pseudo-culture maintains most of the behaviors and principles of the culture of transcendence of the "few", without modifying them for the supercodifying procedure imposed on the "many" – who are now "culturally" atomized and tragically disconnected among themselves, who are connected only to analogical media that provide unilateral information as part of the process of homogenizing their subjectivities. All of this was sustained by technological development that seemed to corroborate with the de-potentialization of the "many"; however technological acceleration led to an unexpected and catastrophic turn that involved a break from the system

of linearity on which the culture of transcendence was based. Non-linear systems began to emerge everywhere. Mathematical fractals, dynamic complexity systems, chaos theory in physics, micronarratives and agonistics of languages announced the end of the linear world and provoked a paradigm crisis within the culture of transcendence. This crisis, known as postmodernity, was probably the last stage of the culture of transcendence. In spite of its polyvalence, it was incapable of breaking from the premises of transcendence and was limited to dueling with moribund modernity. It was a cry of despair, but it was lifeless. The multiplication of non-linear systems spawned another phenomenon alongside postmodernization: a set of procedures known as digitization. On this basis, the culture of immanence was able to proliferate on the world scenario. In the history of Western culture, there have been several attempts to replace the culture of transcendence with one of immanence. Since the 'god-as-the-world' of the Stoics and the followers of Spinoza, through to the Dionysian spirit of Nietzscheans, the cultural trend of immanence had been relegated to the sidelines of history. With the advent of virtual networks, however, the trend toward immanence was for the first time able to constitute a world to act in. Online cultural works were the first developments in an independent and virtual world that is parallel to the physical-cultural world, which is outside its laws and codes, but also beyond the art culture of transcendence as we know it. Virtual networks constitute a plane of immanence. They are transcendental. Both digital works and digital culture are part of the plane of immanence and their proliferation precipitates them toward unprecedented potentialization. There is a constant process of heterogenization, mainly due to free replications and procedures of alterity driven through decodified flux. Hence, anarcho-culturalism emerges the main development in the culture of immanence. This is the free play between all the performances taking place in the world of immanence. It is the breaking free from transcendent institutions based on authority and uniqueness and it is provoking irretrievable breakdown everywhere. Hence we can only speak of "digital art" in the metaphorical sense, since for anarcho-culturalism "digital art" means all other disciplines potentially interconnected in a process of trans-codification. Anarcho-culturalism emerges when cultural authority can no longer exercise any power over cultural manifestations or their producers; when their products are no longer marketed; when the value of cultural products is no longer dependent on official consecration or on property, but on their ability to potentialize agents they connect to; when cultural producers are freed of their egos, freed of their names, and released from the innocuous pretension of making history, and so by deterritorializing themselves can take part on a more complex plan where author-constructed meaning is replaced by multiple-meaning strategies authored jointly by the interagents involved; when cultural work is no longer linear and analogical and becomes an ubiquitous system of interactive complexity emphasizing its immersive and bio-cultural aspects, so becoming a cultural transformation machine; when no there is no longer a world of the arts as

such, or of the sciences, or any other discipline, instead there is free interplay between their codes, the free play of diagonals crossing all the planes, all disciplines and that interlink heterogeneous multiplicities in unrestrained play. The culture of immanence proceeds through replication. This is an event that brings the virtual world of networks closer to the world of life, since both are digital. Clones, auto-poetics and viruses are shared features of both worlds. Replication is its mode of production and invention. The notion of life developing through the differential survival of replicating entities becomes the norm for digital culture. It is not species, genders or disciplines that matter, but the digital genes through which they replicate. They emerge from codes; from deviation and recombination, through topological changes enabling the emergence of new bio-cultural futures, producing the inconstant flux of the bio-digital-sphere. Life in culture is not just another metaphor; it is true in the literal sense. In the world of digital immanent bio-culture, the fixed and the constant can only be transitory states. There are no constants, only variables of variables. Their nature has the power to stretch, delete, cut, twist, cut out, tear up, explode, multiply, and contaminate. Digital instrumentals were made to potentialize transformative capabilities. Transcendental contemplation - of beauty or of the sublime – gives way to immanent participative and transformative interaction. All cultural production is there to be destroyed, its duration depends only on its replication, because it can be altered, torn apart and cut in pieces. But when this happens new digital productions emerge and in turn are connected to others, but any talk of digital productions involves networks. Each digital production, through its immanent interconnections, is involved in a network. So one may also see each interagent as possessing a network of immanence. Digital networks connected with synaptic networks. Immanence of both networks. The culture of immanence goes beyond the subject-object relationship. The network is transcendental, but has no subject. Objects are no longer things, but only flows or performances. Therefore it is not a question of the subject's fruition of a work of art. What matters is that performance is moving across non-linear networks flowing from digital networks to synaptic networks and vice versa. It was a new non-linear mentality that moved digital builders and engineers to build the interface between the two networks that is known as digital hypertext. This became the condition sine qua non for the existence of non-linear communication. Digital hypertext, however is not a structure, not a linear linguistic vision based on transcendence of digital hypertext. It is a machine, a digital machine for non-linear performance based on the mouse as interface. It has nothing to do with text, but has to do with triggers and performances, so there are two evolutionary procedures in hypermachines: one the one hand the triggers or buttons that unleash performances and guarantee non-linearity for extensive topological simultaneity. The multiple triggers thus constitute commutation fields, but will tend to disappear in their unfolding and be incorporated into the course of the performances. On the other hand, performances as the actions produced by interagents and programming; in the case of the latter we will find actors and scripts, but also other triggers that execute these actions. So all media become part of digital hyper machines, as do other non-linear machines, due to their digitality: imagetic machines, textual machines, musical machines, but also simulator machines, intelligent machines, thinking machines, emotive machines, living machines. With the growth ofnetworks and the multiplication of interconnected digital hyper-machines, the mega-hyper-digital machine emerges where performances circulate: remote controls; values; knowledge; education; spiders. This is the destiny of shared cultural products that produce deterritorialization in cultural productions and expand collective creativity and increase cultural heterogenization. Thus a mega-digital production is formed by multiple micrological productions conceived by several artists, scientists, philosophers, and cultural activists scattered around the world and no one would even know where one cultural production ends and another starts: 1) sharing with cultural productions already published: 2) sharing by those involved in conceiving unprecedented cultural production - in both cases creating a network of undetermined growth. Besides these hyper-machines and mega hyper-machines, there are also archiving machines that emerged to fill needs for accessibility to contents on digital networks. There are hundreds of them, but only a few are employed by digital users. However, archiving-machines do not fulfill their main function, they can no longer provide what they are supposed to provide: accessibility to any subject on any material connected to the network. This inaccessibility arises from the difficulty of finding something in a world where the astronomical amount of content on different subjects is growing exponentially. It is also due to the method of classification and priorities that archive-engines produce. Although some work on a Boolean basis in an attempt to overcome these limits, they remain insufficient - despite achieving greater coverage. Thus an enormous volume of digital material is inaccessible, despite being connected. Only the tip of the iceberg is usually available, most is in the digital depths, which we could call the digital unconscious. In a way, this digital unconscious is important because it produces an opacity and digital flattening in the network that obviates control by the state apparatus. Digital police can only reach the surface of the network. On the other hand, the digital networks' unconscious becomes crucial in the relationship with the agents of digital culture, because new mechanisms can be established to bring up inaccessible materials by setting up a transformative combat force. Let us recall that it was crypto-anarchism that created the conditions for messages sent over the network to maintain privacy. Another auxiliary force is the power of the free products that are destabilizing digital capital with unexpected consequences for the world market. For each digital product that is marketed, another similar one emerges, sometimes an even better one, but in any case free. This is not a reference to pirated products, but on the contrary to products created by programmers or cultural agents who do not want to sell or distribute their products for any form of payment. There are programs that cost nothing and are open source so that anyone may contribute to their development, thus showing the power of collective creativity. All this points to the anarcho-cultural nature of digital networks. Other forms are being adopted too, mainly in education. Free digital education worldwide,

distance learning based on self-centered learning and initiative by those taking part, thus undermining academic teaching based on discipline and control and usually supported by state and church. So anarcho-culturalism can not only confront control-society but the society of the spectacle too. The culture of immanence and immersive participation poses the possibility of an agonistic in relation to the analogical mass media that brutalize thousands of people through introjection of memes and signic programs for the perverse purpose of selling their products. Let us recall that virtual networks can absorb everything. There is no control of what may happen, despite attempts to exercise control, but there will always be means and strategies to avoid this control imposed by the culture of transcendence. Hackers multiply to the extent that there is an attempt to control them. The nature of networks is one of anarchical immanence. They belong to no nation or political state. They are pure potentiality. Legal systems have no competence over them, since they are beyond the domain of states, however they can absorb modes that are foreign to them without being basically altered or having their nature threatened with crisis, so they are treated in an analogical (linear) way, in which case there is a flattening of their potential, because treatment is lineal and supercoded by their authors or producers, it does happens. Or through ignorance of the potentiality of hyper-machines, or through simple reproduction of analogical behaviors for the purpose of massification. In both cases all the potential that digital instruments can provide is despised by an extemporaneous mentality that has failed to move away from the linear mode of thinking and has remained territorialized in the world of transcendence. On the other hand the techno-digital progress and the culture of immanence lead to a different mentality. This can only take place if there is deconstruction of academic education procedures and de-mimetization of the behaviors and pragmatics imposed on contemporary subjectivity. It is crucial for people to actually know how to produce hyper-machines and hypertexts and just

not manipulate them. There will only be a new mentality, going beyond the current one based on writing, if there is a non-linear way of thinking and this requires a hypertextual pragmatic. Hypertexts should be on the curriculum of every elementary school in the world as preliminary studies for digital culture. That is why it a policy of cultural immanence is so important to create conditions to not only bring about digital inclusion of the disadvantaged, but particularly their inclusion in digital culture and this can only take place through the pragmatic of digital performances. It means starting by learning hypertexts, but also providing accessibility to cultural productions that are being developed on networks. This is the aim of the several events such as digital festivals that succeed in bringing together a large number of cultural productions involving the multiplicity of events flowing across the networks. They provide the public with access to the problematics that producers, programmers and researchers are currently developing. However, some of them are showing digital productions as mere innovation and usually from the angle of the forced analogical unity of the culture of transcendence. Let us not delude ourselves into thinking that the general public is taking part in these great digital changes, since economic conditions do not allow such a development and on the other hand massification - imposed mainly by the mass media – obliterates inclusion in digital culture, despite the fact that they are often themselves connected to the network, although not really part of digital culture, and confined to programs as products of the mass media. Several traditional cultural institutions such as galleries, museums, etc. have been attempting to show virtual works but they do so from the transcendent angle of the curator. Now these institutions are under the culture of transcendence, which is based on a certain cultural axiom, i.e. principles and concepts based on discursive authority and on meta-narratives and meta-languages. Both art critics and curators operate as the apparatus of cultural cooptation in so far as their speeches are always meta-linguistic and transcendent speeches that subsume concepts or works of art with the aim of submitting them, semioticizing them to judgment of authority, to judgment of axioms, so that works and artists are always on a secondary level and the public is submitted to passive contemplation through this cultural spectacle. The culture of immanence operates on a different basis, it is the culture of virtual (potency), of digital networks in the agonistic of micro narratives; it does not work through apparatus, because they are cultural war machines for enduring transformation of all codes. Instead of curatorships and curators the culture of immanence operates with strategic organizers who work not with an axiomatic approach, but with a network of performances, a network of problematics that incrementally empower interagents and the general public. Instead of contemplative exhibitions, the aim is a digital eco-system built with strategies for contextualizing the public in relation to biodigital problematics. A performance network that interlinks the presentation of works by cultural producers, interactive and intelligent manipulation by the public, dialogue between public and producers, presentations of theoretical works by producers. There would then be an eco-cultural environment of interactive immersion enabling passive spectators to become active interagents and so produce their own cultural connections. The atomized "many" would become culturally interconnected to form a sociocultural nanotechnology.

Art in the Digital Domain

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Abstract

The primary objective of this presentation is to explore relevant technological, cultural and aesthetic perspectives of Digital Arts. The Digital Arts staff of the London College of Music and Media, a faculty of Thames Valley University see the 'computer artist' as a creative individual who must engage both the pragmatics of technology and the free invention of art, bringing them to a successful synthesis in cutting edge projects. Using digital media as a unique palette for personal expression they will present a series of projects which capture the imagination, engage the intellect and excite the emotions.

1. Theme

With the development of the computer fundamental changes have occurred in the way we communicate, create and express ourselves. The pedagogy of the London College of Music and Media has an approach to learning and art production that encourages multiple skills, interdisciplinary research, inventive thinking and an understanding of art history and contemporary visual culture.

We will look at the way Multimedia is facilitating the free play of the imagination, which the philosopher Kant deemed vital to the production of art and examine how these new developments are helping to encourage the creation of hybrid genres. Explore the parameters of virtual reality and interactivity and demystify terms like cyberspace, synasthesia and hyper reality. Examine the crossroads digital artists have reached in artistic development. Review the art and technology debate. Look at why new technologies call forth responses from artists who choose to work in the digital domain.

2. Programme

2.1 loc-Reverb Richard Colson

Colson's work has recently been exhibited at the Digital Salon in New York. His research interest is interactive multimedia.
richard.colson@tvu.ac.uk

2.2 I, Robot James Coupe

Coupe's area is experimental digital media. His research area is robotics and interactive installations.
james.coupe@tvu.ac.uk

2.3 Purbeck Rambles Jeremy Gardiner

A former Harkness fellow at the Media Lab of the Massachusetts Institute of Technology Gardiner's research interests are in immersive environments.
jeremy.gardiner@tvu.ac.uk

2.4 Visions and Spaces Michaela Reiser

Reiser's work includes web design and digital art. Her background is in architecture and the focus of her research work is immersive imaging.
michaela.reiser@tvu.ac.uk

2.5 Experimental Media Hedley Roberts

Former artist in residence in the printmaking department of the RCA. One area of Roberts' research is digital printmaking.
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2.6 Ancient Threads Vicky Squires

Squires' background and research is in typography and design, with more recent work including digital animation and special effects.
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Reference

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[2] Bruce Sterling (ed) Mirrorshades, London: Paladin, 1986
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Workshops

RECOMBINAT ORAI

#1751

Melentie Pandilovski - Director of Contemporary Art Center – Skopje

Adam Zaretsky – Bio artist

Dr. Liljana Simjanovska – Research Scientist in the Center for Genetic Engineering and Bio technology in the Macedonian Academy of Sciences and Arts

Georgi Stoilokov- Gogo – Independent researcher and theorist

Abstract:

The workshop Recombinant ORAI is concentrated on the influence of techno-scientific change upon society, hence the ideological, social and ethical discourses of Genetic Engineering (GM Food, Human Genome Project, etc.), and the cross-issues of biotechnological research, informatics, industrialization, and techno-utilization. The project also takes into account the spreading of Bio-Sciences (including flourishing bio-business, genetic databanks, security issues) and the reception by media, and the public. This especially because current research of broad fields in biotechnology and aspects of genetic engineering in a cultural and a social sense, may assist us in the visualizing of our future.

The workshop takes into consideration the Nagoya Orai book. This will represent a successful immersive educational experience for interested participants.

The short introductory tutorial part is provided by Dr. Liljana Simjanovska, geneticist. It consists of: Introduction in laboratory practice (methods and equipment for RNA/DNA analyses: RNA&DNA extraction, Southern blot, Northern blot, DNA fingerprinting, PCR, RT/PCR, ASO hybridisation, SSCP, DGGE, DNA cloning and DNA sequencing).

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The workshop in fact represents a continuation of the project "Society and Genomic Culture" which took place in Skopje, Macedonia, 2001. Namely, for the artistic part of the workshop we have created a system (already successfully applied in Skopje) consisted of using another textbook from the past, the encoding hexagrams from the I-Chin into DNA. The involvement of a group of artists in the creation of a sequence to be inserted into an organism is a rather penetrating way to breach the gap between wet lab work and popular conceptions about gene splicing. Not only has the group created a system, but also we each took turns consulting the Oracle of the Book of Changes to form a group sequence of uncertain fortune, which may be considered as radical text poetry and a way to meditate on the role of the arbitrary, in semiotics, in evolution and in human behaviour. The artists threw coins, which were then translated into both divination text and sequentially recorded chemical amino acids. The sequence, derived from the universal random luck access point, is now a stable and inheritable sequence in a MC-12 (Macedonian Chi 12 artists) strain of K-12 E. Coli.

To sum up, the proposed workshop will culminate in the construction of a random and collaborative sequence of DNA that would come up from the Nagoya Orai book, which will then, inserted into the K-12 E. Coli genome (or similar).

Egotiation: the interdisciplinary process from chaos to concept

Magnus Jonsson, Engineer, Smart studio, Interactive Institute, magnus.jonsson@tii.se
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Abstract

The Smart Studio at the Interactive Institute in Stockholm is an experimental, interdisciplinary group that develops ideas and projects related to the use of information technology in art and everyday life. The studio consists of people from varied backgrounds as art, architecture, cognitive science, cultural studies, design and engineering. There are several projects running parallel in the studio, consisting of smaller and larger workgroups. The studio members also assemble in joint force, at least once a year, to develop an idea together from scratch. In an attempt to consciously use everybody's individual knowledge and background as an asset in the creative process the group develops methods to work as one large, many-faceted brain and body. The aim is to create an unexpected and extraordinary result that could only be generated out of the mix and interference of everyone involved. Brainball (honorary mention at Ars Electronica 2001, more info at smart.interactiveinstitute.se) is an example of this. The studio members always look forward to this process and find it to be at the core of their intentions with interdisciplinary practice.

During a one-day workshop, the Smart Studio would like to invite participants to take part in a similar process and share the brainstorm techniques that are used in order to realize this convergence of very different minds.
Proceeding from a topic theme, the workshop will explore some methodologies for creating new concepts together in groups. The groups should be as mixed as possible to give each individual a chance to confront the wealth of variety in the workgroup and the assets and problems that this brings about. The topic will be biofeedback, using the electrical signals from the body as an input to a technical device or system. This is a topic the Smart Studio has worked with in several projects, as Brainball, Brainbar and the Virus project.

1. The workshop

The workshop will start with background information about the Smart Studio and workshop methodologies, and will after that turn into an experimental arena for generating ideas within the topic. Members from the Smart Studio will coach and lead the process using different methods for conceptual development. The aim for the day is to create a number of concepts and sketches that will inspire the participants into cross-disciplinary work of their own.

1.1 The outline for the workshop

1.1.1 Background Smart studio and work methods.

- Working in a cross-disciplinary group
- Workshop as a work format
- Methodologies; overall planning, what kind of process we want, workshop outlines, time aspects, material and documentation.
- Generative phase, examples: Brainstorming, Visualisations, Provocations and Surrealist games.
- Visualize result, sketches, scenarios and prototyping.
- Evaluation and choosing ideas
- Exploration and evaluation of new work methods.

1.1.2 Background about biofeedback systems and our earlier work in the area, projects like Brainball and Brainbar.

- Defining biofeedback systems and examples of signals used in these systems.
- Earlier projects:

Brainball is a game, a piece of art and a research project in human machine interaction using brain activity. Brainwaves are measured by EEG-sensors to allow interaction between two persons playing the game. The players control a ball on the table through their state of relaxation, and the game object is to score a goal with the ball on the opponent's side by relaxation.

Brainbar is a mechanical bar that mixes a drink from the visitor's brainwaves. The drink mixed depends on the visitor's state of mind.

1.1.3 Generative phase

Using the different methods presented and thereby negotiating between egos, the groups will engage in a creative process.

1.1.4 Quick sketch phase

Ideas will take shape with sketches and scenarios.

1.1.5 Presentation of concepts for the rest of the group.

1.1.6 Final discussion and summarizing the experience.

Tutorials

Web Radio and Audio Streaming Primer

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Abstract

This tutorial will cover the ins and outs of internet radio, from setting up your own station, to understanding current copyright law and putting together the proper equipment for an effective webcast.

Tutorial/Lecture

As the founder of the New York City Independent Media Center's Sound Collective (http://www.nyc.indymedia.org/sound-v2.php3) I will teach an introductory tutorial on the basics of web radio and web streaming. In our two year history we've interviewed filmmakers , Activists, Intellectuals and Radio Pioneers. Guests have included free software pioneer Richard Stallman, Filmmaker Stephanie Black, Radical thinker Noam Chomsky and Microradio veteran Tetsuo Nogawa.

Web Streaming comes in many guises. From expensive proprietary systems like Real Audio to cheap and free systems like Quicktime Streaming Server and Icecast. The tutorial will cover the differences between systems and will weigh the pros and cons of each. I'll explain how and why Indymedia has settled on the Icecast model for web streaming.

Recent changes in US copyright law, as currently defined in the Digital Millenium Copyright Act (DMCA) will have an ongoing effect on the future of internet radio. Some time during the tutorial will be devoted to discussing the ramifications of the current legislation as well as pointing to future paths for people and organizations interested in continuing to webcast their content.

The class will conclude with a demonstration, setting up an Icecast stream and hosting a short 5 minute show from the ISEA conference in Nogoya and going live to the netoworked world at large.

If time permits I'll explain some of the necessary audio equipment and field questions from the audience.

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ISEA—The Inter-Society for the Electronic Arts

The Inter-Society for the Electronic Arts is an international non-pro t organization dedicated to the promotion and development of creation in the eld of the technological arts.

ISEA is committed to interdisciplinary and cross-cultural communication/cooperation between the arts and the eld of technology, science, education, and industry.