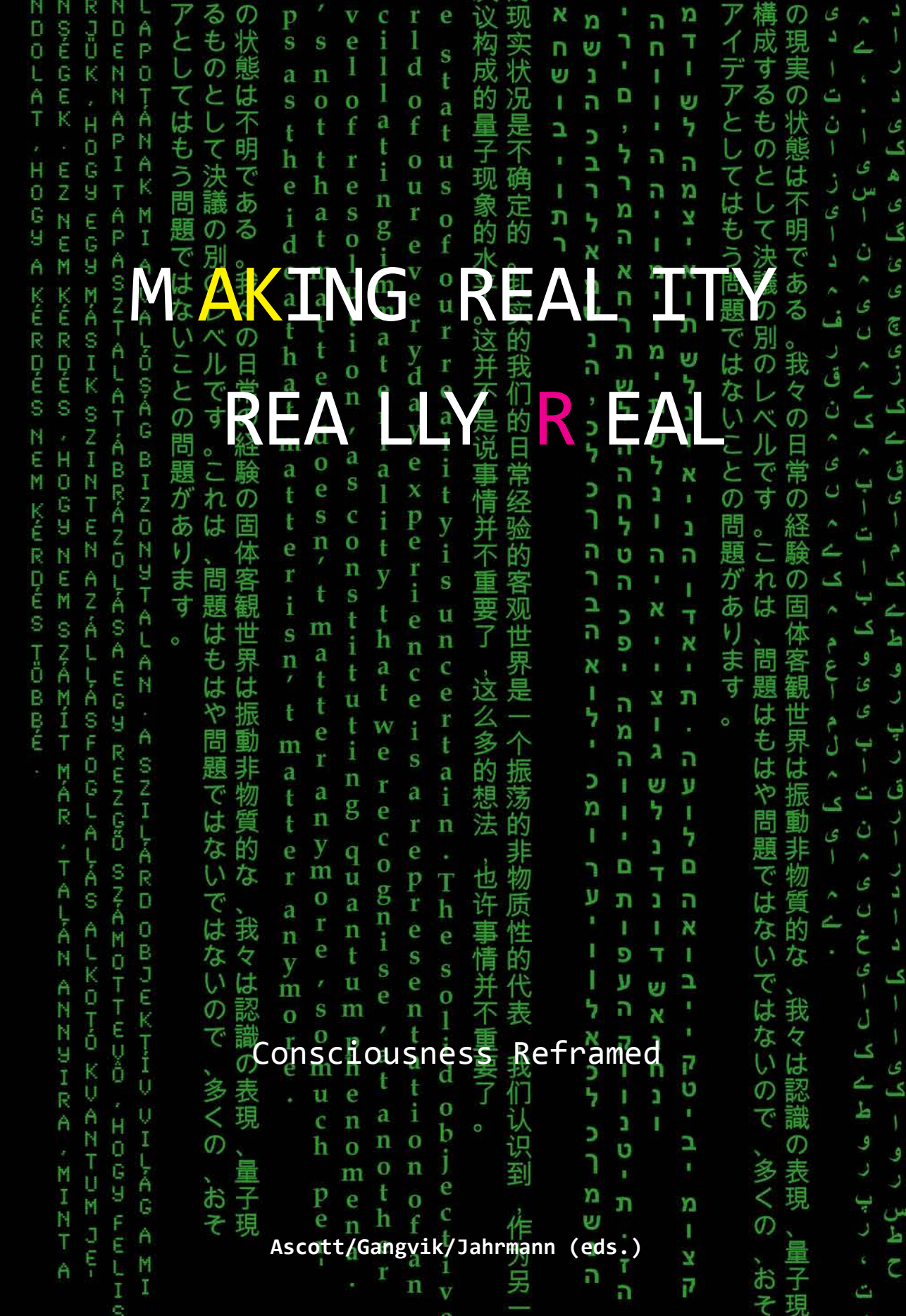

MAKING REALITY
REALLY REAL
Consciousness Reframed
Ascott/Gangvik/Jahrmann (eds.)

MAKING REALITY REALLY REAL

MAKING REALITY REALLY REAL

Consciousness Reframed

Trondheim 2010-09-20

CONFERENCE:
**The 11th Annual International Research Conference, Consciousness Reframed:
Art and Consciousness in the Post-Biological Era, Making Reality Really Real.**

Convened by TEKS – Trondheim Elecronic Arts Centre
teks.no

November 4–6, Trondheim, Norway

Conference President:
Espen Gangvik

Chair, Scientific Committee:
Roy Ascott

Members of the Scientific Committee:
Margarete Jahrmann
Barbara Maria Stafford
James Gimzewski
Luis Eduardo Luna
Marco Bischof
Roger Malina
Ryohei Nakatsu
Victoria Vesna
Espen Gangvik

Publication Committee
Roy Ascott
Margarete Jahrmann
Espen Gangvik

Editors: Roy Ascott | Espen Gangvik | Margarete Jahrmann

Editors

Roy Ascott
Founding President of the Planetary collegium, Full Professor of Technoetic Arts at the University of Plymouth, UK

Dr. Margarete Jahrmann
University of Applied Arts Vienna, Austria
University of the Arts Zurich, Switzerland

Espen Gangvik
Director of TEKS, Trondheim Centre of Electronic Arts, Norway

Graphic Design:
Tibe T reklamebyrå AS
tibe-t.no

Cover design:
Roy Ascott

Proofreading & editing:
Tibe T reklamebyrå

Printing and binding:
Wennberg Trykkeri AS, Trondheim
Printed and bound in Norway

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machines or similiar means, and storage in data banks.

Product Liability
The publisher can give no guarantee for the information contained in this book. The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

© 2010
TEKS Publishing
Printed in Norway
teks.no

ISBN 978-82-998211-2-4
TEKS Publishing

Copyright images:
Authors unless otherwise indicated

This book is made possible by the financial support of:

Arts Council Norway
KORO
NTNU
Stiftelsen Fritt Ord
Sør-Trøndelag County Council
The City of Trondheim
Torstein Erbo's Gift Fund

Contents

INTRODUCTION

8 Roy Ascott
10 Espen Gangvik

PAPERS

12 Julieta Aguilera
14 Inês Albuquerque / Rosa Oliveira
17 Hava Aldouby
20 Peter Anders
25 Kęstutis Andrašunas
28 Kathrine Elizabeth Anker
31 Artifist:
C. Cottereau / G. Meurée-Cottereau / V. Meurée
34 Elif Ayiter
37 Marco Bischof
40 Pier Luigi Capucci
43 Claudia Cardoso-Fleck
47 Alexander Ćetković
50 Jacques Chueke
54 Geoff Cox
58 Dew Harrison
61 Blanka Earhart
64 Heinrich Falk
67 Maria Luiza Fragoso
70 Martha Gabriel
73 Luis Gustavo Bueno Geraldo
76 James K. Gimzewski
80 Luis Miguel Girao
83 Jane Grant
87 Salvatore Iaconesi / Luca Simeone
91 Eiko Ikegami / Edward Colin Ruggero
95 Margarete Jahrmann
101 Katerina J Karoussos
105 Max Kazemzadeh
108 Rachel Kessler / Matthew Fielder
113 Linus Lancaster
116 Renata La Rocca
118 Živa Lubjec
121 Luis Eduardo Luna
128 Ryohei Nakatsu
133 Enrico Nardelli
137 Simeon Nelson
141 Jennifer Kanary Nikolov(a)
144 Glauce Rocha de Oliveira
148 Mary Oliver
151 Pam Payne
153 Mike Phillips
157 Clemens Plank
161 Barbara Rauch / Michael Page
165 Julian Rennie
168 Clarissa Ribeiro
172 Paolo Maria Rodrigues
175 Emily Schleiner
179 Ellen Sebring
181 Paul Sermon / Charlotte Gould
184 Diana Reed Slattery
188 Simona Sofronie / Oswald Devisch
192 Marko Suvajdzic
195 Victoria Vesna / Siddhart Ramakrishnan
200 Claudia Westermann
202 Xiaoying (Juliette) Ying

BIOGRAPHIES

INTRODUCTION

Roy Ascott

PRESIDENT PLANETARY COLLEGIUM,
UNIVERSITY OF PLYMOUTH, UK

In contemporary Western culture, the transformation of our sense of being, of presence, and the nature of time, can be seen as a consequence of accelerated developments in the technologies of mind and of the body (technoetics). Much earlier cultures also developed technologies, often dismissed as "simply" somatic or vegetal, that had the capacity to transform consciousness, reaching it would appear a spiritual significance that has so far, in these early days of digital development, eluded us. There may be political, corporate or cultural reasons for this. But as we move out of the era of techno-primitivism and reductionist fundamentalism, we can hopefully look to the encoding of empathy and emotion in computational systems, and so to an understanding that only when the computer can feel will there be machines that think. This may lead, in turn, to a greater understanding of what constitutes reality, or, as some might see it, a greater capacity to (re)build it, and ourselves, bottom up.

A significant part of our lives is spent online, communicating and relating to each other asynchronically; we inhabit phase-space, and live in non-linear time. Central to this ontology is the emergence of field-thinking, especially in the new biophysics, which may generate quite new understandings of behaviour, communication, and identity, leading perhaps to new cultural and social systems and structures. Field-consciousness can contribute to a more collaborative, syncretic approach to the ways we come to understand the nature of reality. Whether based in the nanofield and quantum domains, or in energy-field sciences yet to be unfolded, emergent forms of connectivity will amplify the hypercortex, and our understanding of mind-at-large, and will transform the potential of art to contribute to the variability of culture, to what can be identified as Variable Reality, coming a long way from the old VR. This is to aspire to a kind of accelerated alchemy. The deeper we go into ourselves, the more selves we discover. We recognise that the self is not fixed but generative. We are in an endless state of becoming. And it's the same with what we consider to be "reality": the deeper we penetrate it, the more realities we encounter, the more variable its constitution. In this respect, it is in the destiny of art, and the responsibility of the artist, to navigate consciousness by all means that might contribute to the definition and construction of the variables.

The status of our reality is entirely uncertain. Our current understanding asserts that the material world experienced through our senses is a representation of quantum phenomena that can be measured at another level of resolution. For those who live largely online or in cyberspace, virtual reality provides a vivid normality that renders the material world largely obsolete, just as those contained in a Cartesian world-view feel that the limits of their reality are substantially definitive. But may not subatomic particles in turn be representations of something beyond, something that approaches the really real? The question haunts all speculation on the nature of reality.

If our real, three-dimensional and solid world depends on our senses, how will the world look as our sensory systems evolve? How was it constituted before mankind existed? Therein lies the technoetic question of our time. If our sense of reality is dependent on consciousness, is that consciousness an epiphenomenon of the human brain, or has the brain evolved as an organ of access to a priori consciousness, just as our senses give us access to space?

Until recently, we learned to adapt our sensibilities to fit into separate boxes, natural and technological, that we identified as real, or virtual, spiritual, mathematical, and so forth. We saw them as serving separate ontologies. That separation of worlds has now syncretised into the variable reality through which we flow effortlessly – a reality in which telecommunications, computing, nano technology, and pharmacology will continue to play significant roles. What might be the role of the artist in all of this? Can a trans-disciplinary art practice contribute to strategies for making reality really real?

These issues form the background to the papers collected in this publication, which have been prepared for presentation at the 11th Annual International Research Conference, *Consciousness Reframed: art and consciousness in the post-biological era*. Since 1997, when I first established the series, the conference has continued to bring together artists, scholars, scientists, and engineers in a transdisciplinary discourse of exceptional vitality and relevance. This year the conference is convened and co-directed by Espen Gangvik of the *Trondheim Elektroniske Kunstsenter*, whose discerning, energetic commitment has provided the conditions for creative and intellectual excellence. Previously, institutions in Australia, Austria, China, Germany, and the United Kingdom have hosted the conference. The series is part of a larger conference programme of the Planetary Collegium that has convened in over thirty cities is Europe, North and South America, and the Far East.

The publication contains Keynote papers invited from Marco Bischof, James Gimzewski, Luis Eduardo Luna, Ryohei Nakatsu, and Victoria Vesna. Guest contributors include Peter Anders, Elif Ayiter, Margarete Jahrmann and Diana Slattery. Papers by some seventeen researchers currently involved with the Planetary Collegium, and a further 30 submitted papers selected by the scientific committee, complete the publication.

TEKS – Trondheim Electronic Arts Centre – is proud to host The 11th Annual International Research Conference, Consciousness Reframed: Art and consciousness in the post-biological era, Making Reality Really Real, in conjunction with our first biennial for art and technology, Meta.Morf 2010 – New.Brave.World!.

With the subtitle New.Brave.World!, the biennial is amongst other things looking into research projects and art practices that question with an open mind the state of the modern world. This year's Consciousness Reframed Conference fully complements the biennial's aims.

With the title Making Reality Really Real, Consciousness Reframed picks up where New.Brave.World! leaves off. The conference papers presented in this publication investigate a wide range of definitions of the concept of reality by presenting theories, conceptual ideas, new researches and art projects, that aim, as their driving force, to bring the realities of the really real closer to our hearts, and minds.

ESPEN GANGVIK
Director TEKS

PAPERS

Julieta Aguilera

PHD CANDIDATE, THE PLANETARY COLLEGIUM (CAiiA), PLYMOUTH, UK
julietina@me.com

AN EVOLVING THOUGHT

INTRODUCTION

How is our natural embodied interaction with the world the key to arranging virtual worlds? Of this embodied interaction, how can changing visual elements be understood? From my previous work I have come to the conclusion that change is visually understood as overlapping time-based patterns which are already familiar from natural experience. In this presentation I will survey occurrences of overlapping patterns in visual representation and highlight their significance on immersive visualization.

Virtual worlds can represent familiar as well as unfamiliar places. When virtual worlds are not even unfamiliar places, but rather places where the very definition of space itself is beyond what we know, these worlds in turn become identified with smaller fragments of human experience. In the case of galaxy size visualizations, speed may evoke scale independent of form. Familiar time units are mapped to measures beyond human scale with time. Phenomena such as the time delay between seeing lighting and hearing thunder can be evoked to emphasize these large distances. Light cycles, such as day and night, can be evoked to mark beginnings and ends, and new beginnings. These fragments from human experience can all be described as patterns we can notice and recognize.

Abstracting these patterns into visualizations is not trivial. We are wired to represent patterns in our brains in a way that allows us to distinguish and recognize them. Our human existence results in a bias towards visual representations. Pattern emerges with a logic that may align with aesthetic pleasure. Visualization development is in turn informed by human experience and biased towards the many patterns we perceive. Not only do we understand patterns mentally, but we seek to replicate this learning process in machines. Doing so has made us look more closely to how we distinguish patterns.

Further, access to imagery from new sources, the increasing amount and complexity of visual data, and novel data processing techniques which are now in human reach are stretching our understanding to the point where we need to make sense of interdependent visual patterns which correspond to living systems and dynamic phenomena at multiple pattern scales and time frames.

PERCEPTION

In his notes to Rudolf Arnheim's book, Frederic Leymarie lists experiential bias in visual perception. For Arnheim, vision is not a recording mechanism, but a means to become conscious of structural patterns. Among its traits is that we simplify patterns according to distance: far away objects are simplified to the simplest form of the circle. It is also influenced by strength: weak asymmetric patterns are made more symmetric. (Leymarie, 2001)

The logic of pattern structure can be measured and aligned with perception. It is possible to evaluate patterns according the their fractal dimension, that is, the statistical quantity that gives an indication of how completely a fractal appears to fill space. The fractal dimension cannot determine structure, but only the distribution of fractuation can be used to indicate complexity. Mori et al studied and got to the conclusion that fractal dimension correlates with aesthetic value and that "scaling affects the fractal dimension and aesthetic property of patterns" (Mori et al, 1996).

DESIGN

Design utilizes overlapping patterns and visual perception to embed data into a form that allows interaction with abstract data. The event tunnel visualization tracks data, makes anomalies apparent, and characterizes through visual patterns (Suntinger et al 2008). Relationships become apparent allowing it to inform decision making (Suntinger et al, 2008). Conditions are used to separate the data into overlapping groups within the visualization (Suntinger et al). It puts together many dimensions: a time based one, two related to size (sphere and ring) and color dimensions. (Suntinger et al, 2008)

Pattern visualization can be modeled on natural and physical sciences which would allow for validation of visual display design techniques (Huber and Wiesel, 1968, cited in Ware, 2008) For example, neuropsychology can explain the mechanism of pattern perception by checking the reaction of orientation-filtering neurons assigned to specific patches of the visual field. The system also has spatial channels which distinguish different sizes of features. That is how "neurons deeper in the cortex respond to larger oriented features where those near the surface respond to finer detail" (Blackemore and Campbell, 1969, cited in Ware, 2008).

PROCESS

There are different techniques being used for pattern detection and recognition. For example, while perceptual grouping may join areas based on local features, segmentation may evaluate and assign labels fitting into models to explain the different areas in the image. In this context, object recognition means learning the "underlying probability distribution" of the object (Zheng and Xue, 2009). Clustering can also be understood as the "unsupervised classification of patterns" with the intention of exploring interrelationships to asses structure (Zheng and Xue, 2009). Recursive clustering can be used until a meaningful representation becomes apparent (Zheng and Xue, 2009).

The act of learning to model a semantic concept from many visual patterns makes the model more robust. Regions can be analyzed in terms of color, histograms, distance, angle, etc., then normalized (balancing pixel value

intensity). Salient groups are detected, then a visual pattern is modeled, and a criteria is formed to combine corresponding visual patterns (Sun et al, 1998).

Pattern detection in human perception fits within the Bayesian framework which is probabilistic rather than associative. This may be the best approach to detect patterns as it is capable of integrating higher level chunks within hierarchically structured information (G. Orbán et al, 2008).

DYNAMIC AND SYSTEMIC PATTERNS

Ecological visualization of pattern structure is challenged by scale: methods of spatial statistics such as fractals, spectral analysis, and allometry among others have the capability to describe how patterns change across scales and may help quantify patterns (Levin, 1992). This may help us predict changes where mechanisms behind observed simultaneous patterns depend on living systems, which in turn operate at different scales (Levin, 1992) and over different time ranges (Levin, 1992).

CONCLUSION

It is to be expected that simultaneous patterns will be further dissected as the need to enhance our consciousness of reality and the many interdependent aspects that compose it increases, aided by data processing and visualization techniques. Reality, supplemented with visualizations of dynamic data and active relationships, which we cannot infer from natural experience, becomes even more real.

REFERENCES

LEVIN, S., 1992. The Problem of Pattern and Scale in Ecology: The Robert H. MacArthur Award Lecture. Ecology, Vol. 73, No. 6. Ecological Society of America, USA. pp. 1944, 1947, 1957, 1960.

LEYMARIE, F., 2001. Art and Visual Perception by Rudolph Arnheim. Notes by Frederic F. Leymarie.
URL: http://www.idemployee.id.tue.nl/g.w.m.rauterberg/lecturenotes/JFS-lecture/leymarie-2001.pdf
Accessed July 2010. pp. 6–7

MORI, T., ENDOU, Y. and NAKAYAMA, A. 1996. Fractal Analysis and Aesthetic Evaluation of Geometrically Overlapping Patterns. Textile Research Journal September vol. 66 no. 9. USA. pp. 581–586

ORBÁN, G., FISER, J., ASLIN, R., and LENGYEL, M. 2008 Bayesian learning of visual chunks by human observers. Proceedings of the National Academy of Sciences, USA. February 19, 2008 vol. 105 no. 7 2745-2750. The National Academy of Sciences, Stanford, USA.

SUN, Y., SHIMADA, S., TANIGUCHI, Y., KOJIMA, A., 1998. A Novel Region-based Approach to Visual Concept Modeling Using Web Images. Proceeding of the 16th ACM international conference on Multimedia. ACM, New York, NY, USA.

SUNTINGER, M., OBWEGER, H., SCHIEFER, J., 2007. The Event Tunnel: Interactive Visualization of Complex Event Streams for Business Process Pattern Analysis. 2008 IEEE Pacific Visualization Symposium. Kyoto, Japan, March 5–7. pp. 2–4, 8–9

WARE, C. 2008. Toward a Perceptual Theory of Flow Visualization. IEEE Computer Society Press Los Alamitos, CA, USA.

ZHENG, N., and XUE, J. 2009. Unsupervised Learning for Visual Pattern Analysis. Statistical Learning and Pattern Analysis for Image and Video Processing. Springer London, London, UK. pp. 16–17, 33

Inês Albuquerque

DECA – DEPARTMENT OF COMMUNICATION AND ART, UNIVERSITY OF AVEIRO, PORTUGAL
inesalbuquerque@ua.pt

Rosa Maria Oliveira

ID+ – RESEARCH INSTITUTE IN DESIGN, MEDIA AND CULTURE, PORTUGAL
rosaoliv@ua.pt

ART AS KNOWLEDGE: INTERNET ART

THE INTERNET

Internet changed our world when it became accessible, in a global way, around 1995. We found a new way of living and understanding the world, as the development of this virtual space changed our individual perception. From this moment on information and knowledge became global and free, dependent on something as simple as a click.

The fascination with communication networks is, possibly, as old as we are, since human networks are recognisable patterns in our society (Castells, 2007). The innovation this network provided, which had never happened before, is related to the virtual system in which it is developed: frontiers and time zones were abolished; the geographical location became an irrelevant factor as relationships between individuals were forged based on common interests. The emotional proximity can be understood by means of telepresence and we are now learning how to deal with this novelty.

Regarding art and artists, the use of this media – the Internet – allowed a new way for the creation and distribution of the artwork, initially independent of the major cultural institutions. Adding a reduced cost of production, free access, and global diffusion, it is easy to understand why the Internet became a virtual space for artistic experimentation during its first initial years.

INTERNET ART AND THE PUBLIC

Internet art exists at the crossroad between art, science and technology. It defines the artistic creation made in and for the Internet – accessible and displayed only on the net – that ranges from web sites, software, broadcast, photography, animation, radio, e-mail, to video, telepresence and others.

It was not just the boom of Internet that was responsible for the creation of Internet-based art since, according to Daniels et al (2009), some artists, since the mid 20th century, "had already discovered a fascination for electronic networks and telecommunications in the early 1980s, and began using them long before the power of these technologies to change society had become common knowledge" (Daniels et al, 2009, 16). With regards to the History of Art, Internet art can be understood, for now, as the ultimate consequence of several previous artistic experiments relating art with science, technology and communication, like the works of Fluxus, Sherrie Rabinowitz and Kit Galloway, or Roy Ascott.

> *"Internet art is part of a continuum within art history that includes such strategies and themes as instructions, appropriation, dematerialization, networks and information. It is important to explore parallels between net art and ideas in the work of earlier artists and movements […]." (Greene, 2004, 9)*

The characteristics of Internet art are completely related to the communication media in which it is created. The main characteristics are: interactivity and public participation, ephemeral and virtual existence, global diffusion and free access, as well as multiple and simultaneous access points to the work of art. It is also collective, dynamic and heterogeneous; dependent on the utilisation of physical or virtual interfaces, and can enables new roles for the artist, the public, and work (Albuquerque et al, 2007).

Despite its innovation and characteristics, in which interactivity is certainly the most relevant, what Internet art brought to us was the consciousness of a new role for the public, regarding the relation between public and art. Works such as "Wordtoys" [1] (Gache, 2006), "Text" [2] (jodi.org [3]) or "Tweeting Colors" [4] (Piana, 2009) explore different languages, themes and aesthetic proposals beyond traditional art, and each work places the public in different situations or positions. Despite the obvious aesthetic differences, all the works reach the same conclusion: Internet art presents us with a new perspective about virtual, artistic and aesthetic worlds, opening new theoretical approaches focusing on the particularities of the public's centrality in the aesthetic process.

"Wordtoys" is a recent work of Internet art. It presents a virtual book of visual poetry, which explores the written, spoken and visual languages, and includes sound, text and images. In this interactive work the public has the main role in deciding how to read the book, which story to choose, and how to follow through the several hyperlinks that enable the reader to jump from one poetic world to another.

In contrast, in Internet art works such as "Text" [5] there are no recognizable visual references, where colour and text create an image that serves the goal of misunderstanding communication, placing the observer in a strange and unpredictable world. In this world of bewilderment, each visual element hides a hyperlink that leads to another indecipherable web page, and so on. As an example of Hacker Art this work shows an interest in text, more than in image: the image is translated into code, or it makes use of low quality images. The artistic work is developed by denying the ideas of interactivity and user-friendly interface, through, for example, the creation of fake menus and hyperlinks, and other techniques that disable interaction and communication (Baigorri et al, 2006).

"Tweeting Colors" explores the new world of social networks such as Twitter (in this specific case) or Facebook. It is the most recent work that I shall discuss, and an example of the possibilities of the Web 2.0. This work similarly requires public's participation. However, the public can only

participate through a specific interface – Twitter, and they are confined to follow the directions of the artist. The public are asked to write a tweet, including a colour name chosen from the chart on the website, as well as a number from 1 to 20, and to display it accessible to all, with no privacy restrictions. Consequently, one can access the project's website and verify to what extent the participation is understandable, among all the participations translated into vertical coloured stripes. "Tweeting Colors" can be framed into a new category that could be termed "Social-Networking Art" [6], giving us a key to understand this brand new world of virtual communication and virtual relationships made possible by Internet evolution.

In all these case studies, there is a common element: the public. To understand the new role of the public, some theoretical approaches have been developed. One example is Endoaesthetics, developed by Claúdia Giannetti. In her hypothesis, which draws on Otto Röessler's Endophysics, the author presents the need to adapt the conceptual and aesthetic thought to the conditions of contemporary artistic creation as well as understanding art as knowledge.

> *"Albert Einstein claimed, in certain circumstances, that scientific theories were free creations of the human mind. The most wonderful thing for him, was that, in spite of this, theories could explain the world. We could say the same about art: as a free creation of the human mind, art does not explain an independent world, but reflects on the subjective experience in the world in which we are living and offers distinct ways to explain the environment in which the subject and the work are immersed." (Giannetti, 2006, 69)* [7]

The characteristics of digital and interactive art allow the development of new ideas, and Endoaesthetics should be seen as a theoretical model based in interdisciplinary methods that aims to analyse and comprehend the contemporary artistic creation (Giannetti, 2006). The public (or audience) of an interactive artwork becomes collaborative, part of an artificial world. From this artificial and simulated world, called endosystem, the individual participates in two distinct realities, being simultaneously conscious of the participation in a simulated world, and of the influence of that participation. The one who interacts with the artwork plays a role in a simulated world by participating in an artistic and aesthetic experience.

Following the work of Giannetti, and regarding the importance of the audience in interactive and virtual art, Albuquerque and Torres [8] are developing a new theoretical approach called Aesthetic of the Subject – here subject means public, in an individualise sense. This hypothesis focuses on the relation between the audience and the artwork in interactive art, and considers art as knowledge, placing the lead role of the aesthetic process in the hands of the one who interacts with the work of art. Thereby the aim of this article is to ensure that it is possible to develop new ideas and new ways of thinking about contemporary art.

ART AS KNOWLEDGE: A NEW CONSCIOUSNESS FOR UNDERSTANDING THE WORLD

Currently human evolution confronts us with the need to adapt our way of thinking and living to the technological conditions that are changing the face and heart of our world. The Internet is one of those technological innovations, and Internet art is one of the promising ways for us to understand these changes through Art.

When artists create their Internet artworks, which are only available in the virtual world, they offer us a new position in the context of art and in the aesthetic processes that confer on us a new power: the power to interact and change the work of art, using it in order to gain a new knowledge of the contemporary reality. The public is an active and intervening participant, who has the ability to contribute to the empirical knowledge about the work of art, the contemporary reality, and their own personal world.

Artists can, along with scholars and theoreticians, contribute to the framing of a new consciousness by considering art as having the power to enlighten our knowledge through an artistic and aesthetic process that is not fully enlightened in a scientific way. Art and other creative disciplines should draw on their specific research methods and ideas, and artists and scholars are the most appropriate to explore this field, where practice and theory combine.

It is possible to state that nowadays, by virtue of the relation between art, science and technology, and considering art as knowledge, we are more conscious and attentive to our role in the artistic and aesthetic process, as to our role in the world. Contemporary art is a multi-/interdisciplinary creative process, gathering influences from scientific, technological and human fields in order to develop interactive or collaborative works. Interactive and collaborative art is altering our relation with the concept of Art and therefore artists can interpret and influence this reality and present their own work as a channel to understand it. The current role of Art and artists generates new ideas and debate, and in spite of the differences between the several languages of contemporary art, the possibilities of understanding Art increase and become available to those who accompany the rapidly evolving and constantly changing forms of Art.

ACKNOWLEDGEMENT:
The author Inês Albuquerque wishes to acknowledges to FCT – Fundação para a Ciência e a Tecnologia for the financial support under the reference SFRH/BD/46133/2008, and to Iain Douglas Foreman for the reviewing of this article.

NOTES

1) http://www.findelmundo.com.ar/wordtoys/

2) http://text.jodi.org/

3) *"Joan Heemskerk y Dirk Paesmans integran el grupo jodi.org. Su estética revolucionaria pró-codigo y anti-imagen le ha convertido, en una de las ineludibles referencias del arte de Internet. Su estilo innovador, atrevido y desenfadado ha abierto una línea de trabajo que ha ayudado a definir una parcela importante del net.art."* (Baigorri et al 2006)

4) http://www.tweetingcolors.com/

5) It was not possible to determine the date of this artwork, although the aesthetic characteristics and the relation of Jodi's work can place it as an artwork from the first years of Internet art, around 1995–1999.

6) Term coined to define the kind of Internet art that appropriates the characteristics of social networks.

7) Free translation from the portuguese original: *"Albert Einstein afirmou, em certa ocasião, que as teorias científicas eram criações livres da mente humana. O mais maravilhoso, para ele, era que, apesar disto, podiam chegar a explicar o mundo. Poderíamos dizer o mesmo em relação à arte, pois ela, como criação livre da mente humana, não explica um mundo independente, mas reflecte sobre a experiência do sujeito no mundo em que vive e oferece distintas formas de explicar o meio no qual sujeito e obra estão imersos."* (Giannetti, 2006)
8) Inês Albuquerque, researcher and PhD student in Art Studies, University of Aveiro, Portugal and Ricardo Torres, sociologist and PhD student in Sociology, ISCTE – Lisbon, Portugal. A short version of the article "From Art as Knowledge to the Aesthetic of the Subject: new ways of thinking the art of the 21st century" can be found at ISEA2010 Proceedings.

REFERENCES:

ALBUQUERQUE, I. & TORRES, R. 2007. A rede de Internet e o observador: um novo papel para o fruidor da obra de arte a partir da experiência realizada com os alunos da Universidade Sénior da Ajuda – Lisboa – Portugal. In: FILE – Festival Internacional de Linguagem Electrónica, 2007, São Paulo, Brasil. FILE, 199.
BAIGORRI, L. & CILLERUELO, L. 2006. Net.Art: Prácticas estéticas y políticas en la red, Madrid, Brumaria.
CASTELLS, M. 2007. A Galáxia Internet – Reflexões sobre Internet, Negócios e Sociedade, Lisboa, Fundação Calouste Gulbenkian.
DANIELS, D. & REISINGER, G. 2009. Net Pioneers 1.0 Contextualizing Early Net-Based Art, Berlim, Sternberg Press.
GIANNETTI, C. 2006. Estética Digital: Sintopia da arte, a ciência e a tecnologia, Belo Horizonte, Com Arte Editora.
GREENE, R. 2004. Internet Art, London, Thames & Hudson.

BIBLIOGRAPHY:

ALBUQUERQUE, I. & TORRES, R. 2007. A rede de Internet e o observador: um novo papel para o fruidor da obra de arte a partir da experiência realizada com os alunos da Universidade Sénior da Ajuda – Lisboa – Portugal. In: FILE – Festival Internacional de Linguagem Electrónica, 2007, São Paulo, Brasil. FILE, 199.
AMERIKA, M. 2004. Expanding the Concept of Writing: Notes on Net Art, Digital Narrative and Viral Ethics. Leonardo, 37, 9–13.
BAIGORRI, L. & CILLERUELO, L. 2006. Net.Art: Prácticas estéticas y políticas en la red, Madrid, Brumaria.
CASTELLS, M. 2007. A Galáxia Internet – Reflexões sobre Internet, Negócios e Sociedade, Lisboa, Fundação Calouste Gulbenkian.
CHANDLER, A. & NEUMARK, N. 2005. At a Distance – Precursors to Art and Activism on the Internet, Cambridge, The MIT Press.
DANIELS, D. & REISINGER, G. 2009. Net Pioneers 1.0 Contextualizing Early Net-Based Art, Berlim, Sternberg Press.
FOREST, F. 2008. Art et Internet, Paris, Editions Cercle d'Art.
GIANNETTI, C. 2006. Estética Digital: Sintopia da arte, a ciência e a tecnologia, Belo Horizonte, Com Arte Editora.
GREENE, R. 2000. Web Work: A History of Internet Art. Artforum International, 162–167+190.
GREENE, R. 2004. Internet Art, London, Thames & Hudson.
IPPOLITO, J. 2002. Ten Myths of Internet Art. Leonardo, 35, 485–498.
PAUL, C. 2008. Digital Art, London, Thames & Hudson.
RUSH, M. 2006. Novas Mídias na Arte Contemporânea, São Paulo, Martins Fontes.
SHANKEN, E. 2002. Art in the Information Age: Technology and Conceptual Art. Leonardo, 35, 433–438.
SHANKEN, E. 2009. Art and electronic media, London, Phaidon Press.
STALLABRASS, J. 2003. Internet Art: The Online Clash of Culture and Commerce, London, Tate Publishing.
WAGNER, K. 2007. Internet Art and the Archive. Human IT, 9, 110–134.

Hava Aldouby

FACULTY OF HUMANITIES – SCHOOL OF THE ARTS.
HEBREW UNIVERSITY OF JERUSALEM, ISRAEL
haldouby@mscc.huji.ac.il

VIRTUAL REALITY TURNS BIOLOGICAL: THE CASE OF DAVID CRONENBERG'S eXistenZ

In *How We Became Posthuman*, N. Katherine Hayles (1999, p. 4) dwells on how "information had lost its body". Current discourse on the aesthetics of the information age presents a deep concern with the loss of body in the age of informatics, where the real is increasingly represented, and experienced, in code. "The posthuman view", Hayles writes, "privileges informational pattern over material instantiation, so that embodiment in a biological substrate is seen as an accident of history rather than an inevitability of life" (1999, p. 2). It is thus that embodiment "has been systematically downplayed or erased in the cybernetic construction of the posthuman" (Hayles, 1999, p. 4). For Anna Munster (2006, p. 88), the culture of informatics makes it impossible for bodies to be "sensed as anchor points".

However, Munster believes, immersive technological experiences such as VR "produce both dematerialized senses of the self *and* intensified corporeal sensations or actualizations" (2006, p. 90). And Hayles posits an urgent demand "to put back into the picture the flesh that continues to be erased in contemporary discussions about cybernetic subjects" (1999, p. 5). These texts thus reflect a tendency in contemporary discourses to challenge prevailing notions of materiality "as the carrier for what is ultimately more essential: the information it houses" (Munster, 2006, p. 114).

It is in this context that I wish to draw attention to David Cronenberg's film, *eXistenZ* (1999), which tells a story of entrapment in VR, the most unexpected context in which to encounter embodiment at its most elemental, in the literal form of flesh and blood. In its eschewal of the high tech air and special effects that characterize cyberthrillers such as its notorious contemporary, *The Matrix* (1999), *eXistenZ* enables a critical perspective that is less common in the discourse referenced above, which often limits its discussion to new-media art exclusively. Notwithstanding the film's thematic engagement with cyber-culture and virtual reality, Cronenberg insists on remaining within the boundaries of traditional cinematography, no "new media" involved. The film thus begs a look at how anxieties of disembodiment that are inherent in information aesthetics find their way into traditional, or "old" media such as painting, photography, and (non-digital) film. This question will be briefly addressed in this paper.

Cronenberg's films manifest a distinct "carnal" bias. As Steven Shaviro (1993, p. 126) has aptly put it, they are "unsparingly visceral". In Cronenberg's representations of body-technology interfaces, technology becomes literally embodied. In *Videodrome* (1982), which addresses the perilous effect of telecommunication on the human mind, technology is violently incorporated into the body, as the protagonist's abdomen literally slits open to receive the destructive Videodrome cassette **(FIG. 1)**.

Moreover, this highly embodied intercourse between media and man gives rise to unnatural growths in the form of brain tumors, as Cronenberg literally "fleshes out" telecommunication technology. In several key scenes of this film it is technology that becomes biological, and not vice-versa. In one of the film's key scenes a hand extends from the TV screen pointing a gun at the protagonist, who shoots back. The next thing we see is the screen beginning to bleed, as it gradually transforms into a pallid human chest, bleeding from its gunshot wounds in a distinct connotation of the Crucifixion. Rather than glass shattering and metal bending, we are presented with a TV set that assumes flesh and blood. *Videodrome*, I am arguing, is not out to feature transcendence of the body through mediated (or videated) representation, nor does it purport to "[bring] together informatic selves and organic bodies", as in Munster's idealized "techno-embodiment" (2006, pp. 115–16). Rather, this film evinces a desperate clinging to the "old" body, which insists on reasserting itself. In Videodrome, to quote Steven Shaviro, "[s]imulation is forced to display its body" (1993, p. 137). In this film, then, and to an even greater extent in eXistenZ, the body returns with a vengeance, in a mess of flesh, blood, and viscera.

eXistenZ tells the story of VR game designer Allegra Geller (Jennifer Jason Leigh), and her body guard, Ted Pikul (Jude Law), who are hunted by the Realist underground, out to assassinate Geller on the ground of her being a VR "demoness". Geller and Pikul port into a new game, *eXistenZ,* only to emerge in the end within yet another group of users playing *transCendenZ*, revealed in the end as but another turn in an endless loop entrapping them within VR.

eXistenZ, we learn as the film opens, is operated via biomorphic "pods" made of animal tissue and live neural systems. As the film progresses, the spectator becomes closely acquainted with the gruesome details of the slaughterhouse ambience in which these pods are manufactured, far from the sterile image of the hi tech electronics lab. Along this bloody assembly line, amphibians are dismembered and eviscerated, their neural systems extracted **(FIG. 2)**. The remains are served for lunch at the Chinese restaurant on the precincts, a trope which further underscores the mutual imbrication of VR simulation and bodily existence, in this case via explicit oral consumption.

But oral consumption is not the only modality of interaction between VR technology and the human body in *eXistenZ*. The pink, sensuous pods squeak and vibrate when

FIG. 1: *Videodrome (David Cronenberg, 1982), abdominal slit opens up to receive videocassette*

FIG. 2: *eXistenZ (David Cronenberg, 1999), bloody assembly line of VR game pods*

operated, interconnecting with players via biomorphically fashioned "umby cords" that plug into a "bio-port" in the lower spine **(FIG. 3)**. In one of the most erotically charged scenes in *eXistenZ*, a micro-pod is sucked in its entirety into Allegra Geller's "bio-port", eliciting an intense sexual response in her partner. As in *Videodrome*, where the protagonist's abdomen slits open to accept the throbbing videocassette to which he is uncontrollably drawn, the bodies of Allegra Geller and Ted Pikul literally open up to incorporate the technological apparatus of VR, far outreaching familiar notions of interactivity.

In sum, Cronenberg's film eliminates hi tech VR apparatuses altogether. He does not, moreover, postulate a new form of embodiment in "bio-electronic technology", as Lia M. Hotchkiss has it (2003, p. 15). In *eXistenZ*, I rather argue, technology does not assume "the new flesh", a term which Hotchkiss adopts from *Videodrome*, neither does the film present us with Munster's "virtual, incorporeal capacities of matter" (2006, p. 114). Rather, we are witnessing an anxious return to the body at its most visceral, no electronics included. When Allegra Geller needs to repair her damaged pod, it is not an electronics lab that she turns to. Rather, the pod is placed on an operating table, where the elderly expert, Kiri Vinokur (Ian Holm) performs surgery on Allegra's "baby" **(FIG. 4)**. In answer to Pikul's question, "where does the battery go?", the spectator is reminded that indeed no electronic component is involved, as the device operates on the energy of the living body.

Thus, the very technology that engenders the Baudrillardian hyperreal becomes essentially embodied, as electronics translate into flesh, electric wiring into neural networks. No hint remains of the chrome parts and metallic fixtures that envelop the body in *Crash* (1996), for example. In *eXistenZ*, a story of inescapable virtuality, Cronenberg elects to return to an elemental form of corpo-reality. We are talking "old" flesh here, far from what Hotchkiss sees as the "new cyborg flesh permeated by electronic technology" (2003, p. 16).

At this point I propose to shift perspective for a brief moment, to the persistence of the body in the visual arts of the last decades, beginning with the late 1960s and 70s performances of Body Art, which engaged the living body (most often that of the artist) in concrete, painful violence. Due to the limited scope of this paper, I will focus in brief on a couple of contemporary works, whose starkly real morgue imagery presents an unmediated engagement with death as material fact.

Andres Serrano's *Morgue* series of 1992 presents shocking close-up views of faces and body parts belonging to anonymous corpses. These are titled solely according to cause of death. In *Death by Drowning II* the camera is situated in an uncomfortable proximity to the bruised lips and neck of a drowned corpse, gender unclear. The startlingly close position of the camera becomes even more unsettling due to the impossibility of identification (no name, gender, or any other clue of identity is given). Spectatorship thus becomes a raw encounter with death at its most concrete, most shockingly real, stripped of its romantic aura.

Stephen Shanabrook elects to cast body parts of crime victims in chocolate, commingling seduction (gustatory, olfactory, and visual), with horror and repulsion. These works elicit uncomfortable bodily sensations involving taste and touch, attraction and repulsion, desire and nausea. The works of Serrano and Shanabrook evince a deep engagement with the body at its most material, most palpable and uncomfortably concrete. Moreover, they place the viewer in a disturbing proximity vis-à-vis the body as (dead) matter.

eXistenZ similarly assaults the spectator's sensorium. Between vibrating pods, mucous bone-and-tooth guns, and eviscerated amphibians, one cannot escape, or ignore, the film's heavy reliance on "bodily comprehension", to adopt the phenomenological terminology coined by Vivian Sobchack (2004, p. 65).

Relying on the work of Maurice Merleau Ponty, Sobchack deconstructs the primacy of vision in film studies: "[v]ision may be the sense most privileged in the culture and the cinema […]; nonetheless, I do not leave my capacity to touch or to smell or to taste at the door, nor, once in the theater, do I devote these senses only to my popcorn" (2004, pp. 64–5). Conceptualizing the film experience in phenomenological terms, Sobchack highlights the "commingling [of] flesh and consciousness", positing a film viewer that is a "cinesthetic subject […] able to commute seeing to touching and back again *without a thought*" (2004, p. 71).

In works such as Cronenberg's *eXistenZ*, as in, for example, Marina Abramović's disconcerting performances in

FIG. 3: *eXistenZ (David Cronenberg, 1999), biomorphic "pods" and "umby-cords" form the apparatus of VR*

FIG. 4: *eXistenZ (David Cronenberg, 1999), biological game pod under surgery*

which she obsessively cleaned endless piles of bloody cattle bones, the presence of the carnal – in the form of raw flesh – is so strongly felt that "sense" is experienced primarily as literal bodily sensation. The "meat" imagery we are discussing agitates the entire sensorium, tipping the scale to a point where the real is literally experienced. As Brigitte Peucker concludes in her study of horror films that involve cannibalism, "[h]orror […] overlaps with realism in its expanded sense, with a realism anchored in the response of a spectatorial body whose sensations and affects promote the effect that the image is real" (2007, p. 164).

Are we, then, facing a post-biological turn where "matter isn't matter anymore"? David Cronenberg's film, *eXistenZ* – particularly when considered in the visual arts context suggested above – motions to the contrary. Cronenberg eliminates all familiar hints of technology from his science fictional vision of VR. Only when the users exit *eXistenZ*, to find themselves playing its earlier and less advanced version, *tranScendenZ*, do we see a hint of familiar VR equipment. In the world of *eXistenZ* the flesh returns with a vengeance. It is a biological (re)turn that is at stake, in this and other Cronenberg films, and in the strongly felt "meat" bias in the visual arts of cyberculture. The anxious presence of flesh and blood enables an assault on the senses, eliciting a fully embodied experience, best conceptualized in phenomenological terms. Works of art that are strongly inclined toward the biological, particularly in the sense of the "meat" imagery discussed above, address an "embodied intelligence", rather than a linguistic subject. As such, these works are able to "[open] language to a reflective knowledge of its carnal origins and limits" (Sobchack, 2004, p. 84).

The persistence of the flesh as origin, then, works to counter the major anxieties of the age of informatics. While, on the level of language and the symbolic the hyperreal reigns supreme, in works like *eXistenZ* the body – as Real – reasserts itself through direct address to pre-verbal, pre-symbolic bodily strata. The ensuing embodied experience is as real as real can be.

In her Freudian reading of *eXistenZ*, Theresa De Lauretis (2003, p. 569) writes: "By the end of the century, with the rise of the internet and the new global economy […], the belief in a material reality waned to the point of seeming lost. […] Cronenberg's *eXistenZ* acknowledges the loss. […] The real has receded […] beyond our grasp", and what is more, "even the gooey mess of viscera, spores, and spurting blood […] is a virtual reality effect". What De Lauretis's reading is missing, however, is the phenomenological aspect of the very experience that she dismisses as a mere "virtual reality effect". Experienced by Sobchack's "cinesthetic subject", Cronenberg's film affords a heightened assurance in the persistence of the real and the return of the biological body.

BIBLIOGRAPHY

BEARD, W., 2006. The Artist as Monster; The Cinema of David Cronenberg. Toronto: University of Toronto Press.

DE LAURETIS, T., 2003. Becoming Inorganic. Critical Inquiry, 29, pp. 547–70.

HAYLES, N.K., 1999. How We Became Posthuman; Virtual Bodies in Cybernetics, Literature, and Informatics. Chicago and London: The University of Chicago Press.

HOTCHKISS, L.M., 2003. "Still in the Game": Cybertransformations of the "New Flesh" in David Cronenberg's eXistenZ. The Velvet Light Trap, 52, pp. 15–32.

MUNSTER, A., 2006. Materializing New Media: Embodiment in Information Aesthetics. Hanover, N.H.: Dartmouth College Press.

PEUCKER, B., 2007. The Material Image: Art and the Real in Film. Stanford, CA: Stanford University Press.

SHAVIRO, S., 1993. The Cinematic Body. Minneapolis, MN: The University of Minnesota Press.

SOBCHACK, V., 2004. Carnal Thoughts; Embodiment and Moving Image Culture. Berkeley: University of California Press.

Peter Anders

PLANNING AND DEVELOPMENT DIRECTOR OF THE PLANETARY COLLEGIUM (CAiiA), PLYMOUTH, UK

TRANSCRIBING THE IMPOSSIBLE: A NOTATION SYSTEM FOR CONJURING

As one of the world's oldest performance arts, conjuring combines artistry, technique, and keen psychological insight. The conjuror's craft undermines observers' reality by exploiting lapses of attention, unfounded assumptions, and the illusion of temporal continuity. For this reason conjuring has increasingly become a focus of inquiry among neuroscientists and behavioral psychologists. Reciprocally, there has been a long-term and well-established interest among magicians in the psychological roots of their profession.

This paper will present a brief history of magic and outline some of the interests shared by conjuring and science. It will also introduce a system for transcribing magical performances. This system – a work in progress – has been informed by on-going dialog with performing conjurors and scientific researchers. It is intended for conjurors primarily, but may find use among researchers investigating scientific issues underlying magical performance.

The 19th century magician Robert-Houdin famously wrote that, "A magician is an actor playing the role of a magician." It is in the context of theater that we address *magic* and *conjuring* here: the legerdemain and illusion of magicians. This is in contrast their divinatory or mystical application.

DISTINGUISHING MYSTICISM FROM ILLUSION

The prehistory of conjuring includes the practices of shamans and medicine men which may still be found in many cultures today. The mystical use of magic would likely have been allied with the craft of illusion. Eugene Burger has written that deception would have established the shaman as capable of performing miracles (Burger and Neale, 1995). With this prestige the shaman's rituals and allied techniques could have induced a psychosomatic healing response in patients. The symbiosis of mysticism and conjuring technique was strong among later practitioners as well.

In 1584 Reginald Scot wrote *The Discoverie of Witchcraft* which for the first time publicly distinguished magical mysticism from conjuring technique. Scot sought to debunk belief in witches and halt the persecution of conjurors, revealing their work to be harmless illusion and legerdemain.

> *"Now, because it is relevant, and witchcraft so apparently accomplished through the art of sleight of hand, I thought it would be worthwhile to explain it. I am sorry to be the one to do this, and regret any effect this may have on those who earn their living performing such tricks for purposes of entertainment only, whose work is not only tolerable but greatly commendable. They do not abuse the name of God in this occupation, nor claim their power comes through him, but always acknowledge what they are doing to be tricks, and in fact through them unlawful and impious deceivers may be exposed." (Scot, 1584)*

The paragraph is revealing and prophetic. It acknowledges the economic reasons for secretiveness among conjurors. It also shows magic to be sleight of hand, thereby separating mysticism from conjuring technique. This presages four centuries of antagonism between practitioners of esoteric magic (augurs, psychics, fortune tellers, tarot readers, *witches*) versus conjuring entertainments (stage, close-up and parlor magicians, mentalists, professional pickpockets, jugglers). Remarkably, Scot proposes a use for conjurors beyond the production of magical effects. Conjurors can be employed to expose swindlers and mountebanks – to get at the *truth*.

MAGIC AND SCIENCE

The modern era of Western conjuring begins in the 19th century with the introduction of elaborate stage shows and celebrity conjurors. Their rise paralleled the Industrial Revolution, and many conjurors of the time experimented freely with new technologies. Reciprocally, science and technology also benefited from magic. Georges Méliès, the French conjuror, experimented with then-nascent cinema to create the first special effects which he used in performances and later films. The Pepper's Ghost illusion, a seminal technology invented by Henry Diercks, later translated to cinema optics, mixed reality headsets and laser beam-splitters.

There was also interest in magic from early psychologists, among them Joseph Jastrow who wrote in 1897 that there was "much to interest the student of science in the elaborate performances of the prestidigitateur and the illusionist." (Jastrow, 1897). There have since been sporadic attempts to analyze and utilize magical effects with little sustainable success. (Lamont et al, 2010). However in recent years there has been a resurgence of interest in conjuring's relevance to psychology and neuroscience. (Lamont and Wiseman, 1999) (Kuhn et al, 2008) (Macknik et al, 2008) (Martinez-Conde and Macknik, 2008) (Powell, 2008).

Conjuring is effectively an experimental laboratory for psychological effects. Contemporary scientific concepts of change blindness, inattention blindness, visual saccades, social cueing, and phenomenal constructs of time and causality have long been subject to conjurors' *experiments* on the stage. Teller, of the magic team Penn and Teller, has said, "Every time you perform a magic trick you're engaging in experimental psychology. If the audience asks, 'How the hell did

he do that?', then the experiment was successful. [You've] exploited the efficiencies of [their] mind." (Lehrer, 2009)

SEARCHING FOR COMMON GROUND

However, magic is not a science. As Robert-Houdin suggests it is theater; its actors have unique vision, expression and technique. Constraining any art form to generalizations and principles is not easy. Consider the many definitions of the *basic elements* of magic. In "Looks Easy, Doesn't It", a routine by Penn and Teller, we are told of seven basic principles of magic, methods used by performers to create illusion.

1) Palm: Holding an object in an apparently empty hand.
2) Ditch: Secretly disposing of an object.
3) Steal: Secretly obtaining a needed object.
4) Load: Secretly moving an object to where it is needed.
5) Simulation: Giving the impression that something is happening that is actually not.
6) Misdirection: Leading attention away from a method.
7) Switch: Secretly exchanging one object for another.

Peter Lamont and Richard Wiseman, both performing magicians *and* psychologists, developed a list of nine principles as seen from the audience's point of view. Rather than describing *methods* they focus on the *effects* of a routine. (Lamont and Wiseman, 1999). This list has more recently been adopted by neuroscientists Macknik, Martinez-Conde and their magician co-authors. (Macknik et al, 2008)

1) Appearance: An object appears where it was not.
2) Vanish: An object disappears from where it was.
3) Transposition: An object changes position in space.
4) Transformation: An object changes form.
5) Penetration: An apparently impossible case of matter through matter.
6) Restoration: An object is damaged then restored to its original condition.
7) Extraordinary Feats: The appearance of extraordinary mental and/or physical ability.
8) Telekinesis: The apparent ability to control movement of objects.
9) Extraordinary Perception: The appearance of clairvoyance, telepathy, precognition or mental control over others.

The list resembles one created by magician/theoretician Dariel Fitzkee. His had ten more principles that partially overlap those of Lamont and Wiseman (Fitzkee, 1944). Beyond the nine mentioned, Fitzkee's principles include: Animation, Antigravity, Attraction, Sympathetic Reaction, Invulnerability, Physical Anomaly, Identification, Thought Reading and Transmission, and Prediction.

Even within our limited sample, there is little agreement on what constitutes *basic principles* of magic. The authors' basic principles arise from individual practice, professional discipline, and vantage on the performance. The search for principles is confounded also by the magic literature itself, which has no set standards for recording or archiving magic routines, nor any easy way to compare the work of artists or authors to one another. The texts are isolated, often without bibliographies or indexes to aid the reader. This may be explained by the traditionally secretive nature of magical practice. However, the creation of a useful – or even meaningful – relationship between magic and science requires a clearer understanding of magic as an art form rather than lists of techniques and effects.

MAGIC AS THEATER

To avoid the problem of defining principles we can address conjuring as theater rather than as a science. Theater consists of many elements including narrative, actors, actions, properties and an audience. There is usually a narrative with beginning, middle, and end. These all conspire to engage the audience emotionally throughout the performance, and – in conjuring – especially at its magical climax.

Seen this way we can describe a magic routine as multiple, coordinated actions/reactions happening over time. Some of these occur in sequence, others simultaneously, but all happen within an interval between the set up and end of the performance. One could map a routine's methods and effects much like recording a scientific experiment. The behaviors of the elements would be mapped over time irrespective of expectations or *principles*.

FIG. 1

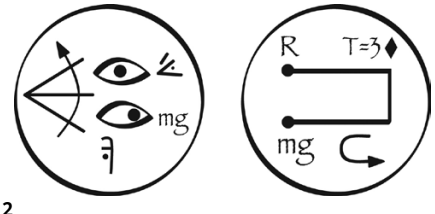


FIG. 2

FIGURE 1. These Hermetic seals represent Copper on the left and Iron on the right. The graphics contain the coded properties of the metals, but were also intended to invoke their allied spiritual powers, much as Egyptian hieroglyphs were thought to have done.

Mapping the procedures of magic has a long, uneven history. The Italian philosopher Marsilio Ficino recommended Egyptian hieroglyphs for their historical depth and their conjuring of the supernatural through emblematic symbols. The magi Giordano Bruno and Agrippa of Nettesheim also wrote of seals for controlling occult powers **(FIGURE 1)**. In present-day theatrical magic the symbols are often literal depictions showing step-by-step procedures of performance. These are supplemented by text describing details of process, verbal patter, and sometimes the history or theory behind an illusion. The whole resembles an illustrated script for a play accounting for a scene's staging, actions, props and speech. However, as previously noted, there is presently no graphic standard for conjuring notation aside from the increasingly common use of video recording.

In 1975 the Spanish conjuror, Juan Tamariz, proposed a system of graphic symbols for conjurors primarily focused

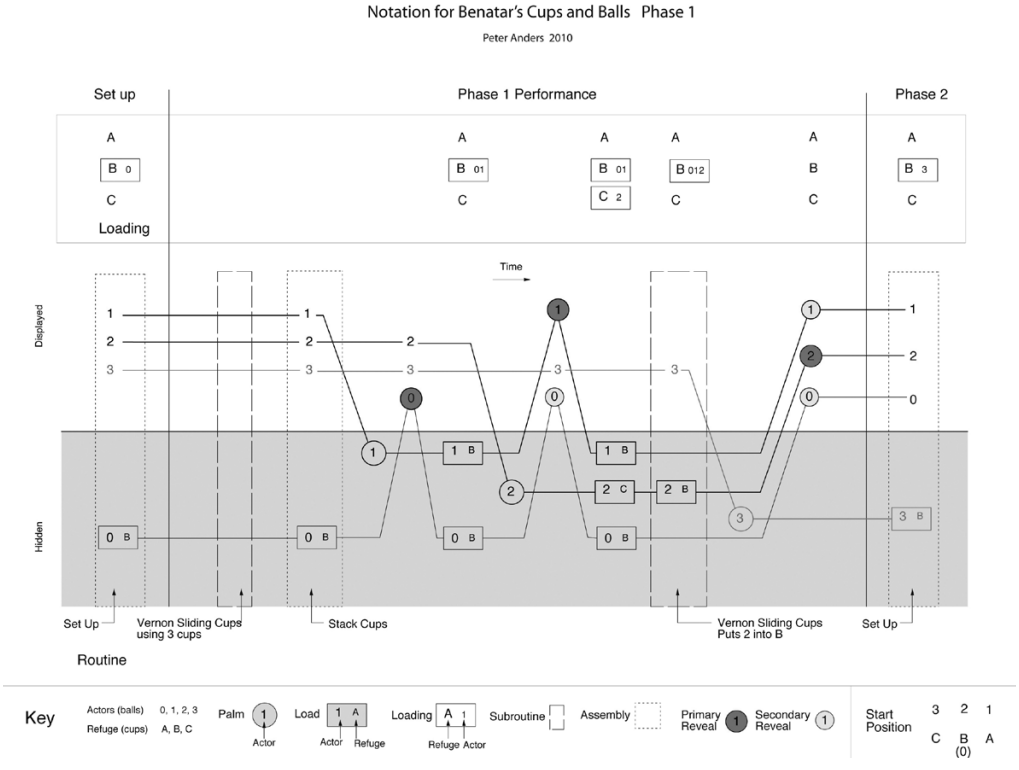

Notation for Benatar's Cups and Balls Phase 1
Peter Anders 2010
Set up
Phase 1 Performance
Phase 2
Loading
Time
Displayed
Hidden
Set Up
Vernon Sliding Cups using 3 cups
Stack Cups
Vernon Sliding Cups Puts 2 into B
Set Up
Routine
Key
Actors (balls) 0, 1, 2, 3
Refuge (cups) A, B, C
Palm
Load
Loading
Subroutine
Assembly
Primary Reveal
Secondary Reveal
Start Position
Actor
Refuge
Refuge Actor

FIG. 3

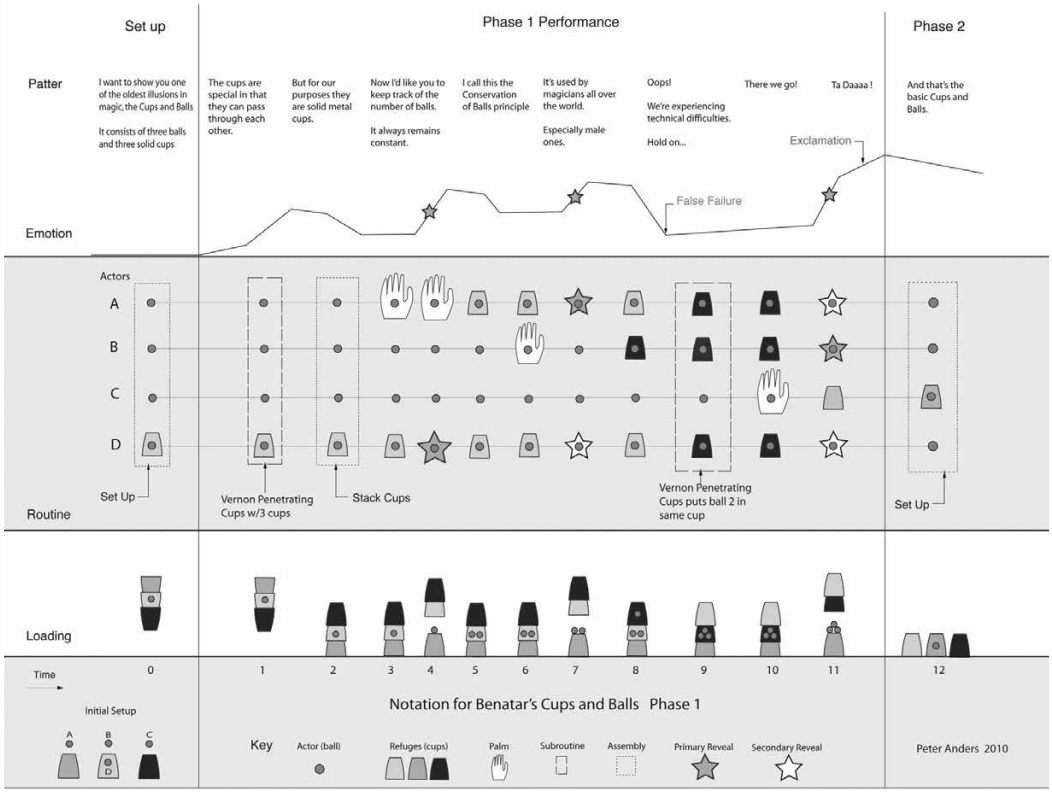

Set up
Phase 1 Performance
Phase 2
Patter
I want to show you one of the oldest illusions in magic, the Cups and Balls
It consists of three balls and three solid cups
The cups are special in that they can pass through each other.
But for our purposes they are solid metal cups.
Now I'd like you to keep track of the number of balls.
It always remains constant.
I call this the Conservation of Balls principle
It's used by magicians all over the world.
Especially male ones.
Oops!
We're experiencing technical difficulties.
Hold on...
There we go!
Ta Daaaa!
And that's the basic Cups and Balls.
Emotion
Exclamation
False Failure
Actors
A
B
C
D
Set Up
Vernon Penetrating Cups w/3 cups
Stack Cups
Vernon Penetrating Cups puts ball 2 in same cup
Set Up
Routine
Loading
Time
0 1 2 3 4 5 6 7 8 9 10 11 12
Initial Setup
Notation for Benatar's Cups and Balls Phase 1
Key
Actor (ball)
Refuges (cups)
Palm
Subroutine
Assembly
Primary Reveal
Secondary Reveal
Peter Anders 2010

FIG. 4

on card tricks **(FIGURE 2)**. It shares some of the abstraction that would have appealed to Bruno and Agrippa, but is actually a concise, short-hand notation that requires only a little practice to use (Tamariz, 1991). Magic historian Stephen Minch relates that Tamariz "did inspire a few magicians, mostly in Spain, to try it; but after more than thirty years, the system is still almost unknown. It shares two things with Esperanto: It is highly logical and efficient; yet almost no one uses it."

FIGURE 2. These examples of Tamariz's notation describe phases of a card routine from the magician's point of view. Translated, the one on the left means, "Card picked by spectator as magician riffles. Card glimpsed by Magician." The one on the right reads, "The magician's holds a red-backed packet of cards face down in his left hand, palm upwards. The top card is the 3 of diamonds."

TOWARDS A POLYVALENT NOTATION

Descriptions of magic routines can range from text and symbols to graphic and photographic images. Depending on the author they may describe technical manipulation or audience response. Given this range of options it would be ideal to have a system that accounts for all aspects of a routine. A graphic system of this sort would enable relating parts of a performance or similar routines, the history and design of magic effects, and easy annotation by readers. It could be used as a teaching aid, but also prove useful to those researching an illusion and its effects.

In an attempt to develop such a system I have analyzed a Cups and Balls magic routine by renowned magician Rafael Benatar. Cups and Balls is a classic illusion. One of magic's oldest, it employs many of the feints, sleights and loads found in other magic tricks. In its evolution over several centuries, conjurors have performed countless versions of this illusion. Benetar himself credits several by name in his explanatory video (Benatar, 2006). So, given that the routine itself is a product of other historic routines and techniques, Cups and Balls seems a fitting subject for study.

Benatar's routine has four phases of varying complexity. With the exception of Phase 1, each depends on the previous for its set-up. The props include three cups with some balls and vegetables. Each phase has a beginning, middle and end with at least one climactic revelation: balls (or vegetables) being where they should not be. All this is accompanied by an amusing patter that engages and directs the audience's attention.

FIGURE 3. This first attempt at charting shows the first phase of Benatar's Cups and Balls routine. It describes only the appearance and disappearance of balls. The gray area shows actions hidden from the audience.

The experimental notation system was originally monothematic, focused solely on the appearance or disappearance of the balls **(FIGURE 3)**. With helpful input from colleagues and professional conjurors, a more pluralistic notation evolved that incorporated magician's actions, audience reaction, as well as behaviors of the cups and balls themselves.

A magic score describing a routine, or phase thereof, is confined to one page to facilitate correlation between subthemes and concurrent events **(FIGURE 4)**. Time is mapped horizontally, starting with *set up* on the left, *routine* in the center, and *end* or set up of ensuing phase on the right. From top to bottom the chart is divided into diagrams of decreasing abstraction that track the subthemes of the routine. The most abstract (patter) is at the top, the most physical (loading of cups) is at the bottom. The diagrams toward the bottom describe the routine and loading of cups, respectively. Below the chart is a time line and reference key. The diagram second from the top charts emotion or hoped-for audience engagement. This graph is admittedly subjective, having at present neither metric nor supporting data. But it could be enhanced by testing a subject audience, an area of study that could benefit from scientific researchers interested in magic.

FIGURE 4. The chart shown here is for the same routine as in **FIGURE 3**. It shows several concurrent narratives of the magician's actions, his props, and the audience.

Reading the diagrams in parallel reveals interesting patterns. For example, the loading of cups at steps 5 and 8 happens immediately after a reveal (shown as a star). This suggests that the audience's surprise and resulting attention lapse disguise the secret action. A joke in the patter coincides with the second reveal in step 7, further misdirection from the load at step 8. Charting the actions of the balls reveals that the hidden ball D is by the end replaced by ball C. Also for those planning alternate routines, the fact that the green cup remains empty throughout the routine may provide opportunities for additional secret loads and reveals. If viewed with respect to similar charts for Cups and Balls, one might discern practitioners' idiosyncrasies or an illusion's historical development over time. The method could be a useful tool for planning new routines as well.

The score is designed for Cups and Balls, but some of its subthemes (patter, audience response, disposition of props) would apply to other kinds of illusion as well. Beyond those mentioned, additional diagrams could be developed specific to card tricks, stage illusion, mentalism, and other categories of conjuring illusions. Indeed, Tamariz's method could also be incorporated within such a strategy.

CONCLUSIONS

Although it has aroused some interest among conjurors as well as scientific researchers, this notational system has not yet been tested in any meaningful way. It is possible that the system may suffer the same fate among magicians as Tamariz's since, as Minch notes, "Most magicians are amateurs, with a very relaxed approach to magic. And many professionals will prefer an intuitive approach to [a] scientific one." (Minch, 2010). Even so, the system may be a useful bridge between conjuring and scientific research given its open-endedness and adaptability. Further inquiry into magic – even expanded to its mystic and occult practices – may yield productive knowledge for understanding the mind, society, and ourselves.

BIBLIOGRAPHY

BENATAR, R. (2006) Elegant cups and balls. [DVD]. Fair Lawn, New Jersey: Meir Yedid.

BURGER, E., and R. NEALE. (1995) Magic and meaning. Seattle, WA: Hermetic Press. pp. 31–37.

FITZKEE, D. (1944) The trick brain. Oakland, California: Magic Limited, Lloyd E. Jones.
JASTROW, J. (1897) Magic stage illusions and scientific discoveries, including trick photography [Book review]. Science, 6, pp. 850–851.
KUHN, G., A. AMLANI, R. RENSINK. (2008) Towards a science of magic. Trends in Cognitive Science. 12, pp. 349–354.
LAMONT, p. , and R. WISEMAN (1999) Magic in theory: An introduction to the theoretical and psychological elements of conjuring. Hatfield, United Kingdom: University of Hertfordshire Press.
LAMONT, p. , J. HENDERSON, T. SMITH (2010) Where science and magic meet: The illusion of a “science of magic”. Unpublished.
LEHRER, J. (2009) Magic and the brain: Teller reveals the neuroscience of illusion. Wired Magazine 17.05. Downloaded on July 6, 2010 from: http://www.wired.com/science/discoveries/magazine/17.05/ff_neuroscienceofmagic.
MACKNIK, S., M. KING, J. RANDI, A. ROBBINS, TELLER, J. THOMPSON, S. MARTINEZ-CONDE (2008) Attention and awareness in stage magic: Turning tricks into research. Nature Reviews Neuroscience, 9, 871–879.
MINCH, S. (2010) Re: Magic Notation. July 5, 2010. Personal email to: P. Anders, (ptr@kayvala.com) from S. Minch (SMinch@hermeticpress.com).
SCOT, R. (1584) The discoverie of witchcraft. [Internet] Available from: <http://www.conjuror.com/archives/discoverie/docs/Discoverie_of_Witchcraft_(contemporary_English).pdf> Accessed July 5, 2010.
SIMONS, D., and C. CHABRIS (1999) Gorillas in our midst: Sustained inattentional blindness for dynamic events. Perception, 58, pp. 1059–1074.
TAMARIZ, J. (1991) The new mini-symbolic method. Madrid, Spain: Frakson Press.

Kęstutis Andrašiūnas

kestutis1a@gmail.com

FORMALISATION OF LANGUAGE AND ARTISTIC CODE
You can Imitate a Duck, but You Can't Imitate the Logic

DISCONTENT WITH LANGUAGE

This is a short survey of the transformation of mystics' ideas into a counting machine; it also deals with lingua universalis. How did attempts to convert thinking into counting turn into the imitation of thinking and imitation games? How did several barely tangible mystical ideas become a logical automaton – the computer?

The creation of a lingua universalis was the aspiration of both mystics and philosophers; later logicians joined them. Mystics were the first to get disappointed in real language; first, they thought that this language was hiding something, perhaps the "real" language of things; second, that it was possible to create a language of their own, a constructed language, which can change reality. They began with the most common generalisation, searching for generality in phenomena in creating concepts or trying to establish a link between number and word.

Philosophers searched for the same. The logic taught by Aristotel in *Organon* became a basis for scholastics' disputes. Theological and philosophical disputes promoted the use of the instrument of logic. It was believed that it is possible to reveal the nature of things with the help of a suitable language. Number abstraction has existed from ancient times, therefore, attempts were made to create idea abstractions, which could be manipulated in the same way as numbers, since there was no abstraction purer than number.

Both theologians and logicians were interested in the double-sided link between language and thing; first they wished to influence the thing; second, to understand and deconstruct it using a special artificial language.

How does language make the analysis of phenomena possible? What is the link between number and concept? Already in the antiquity or the Middle Ages certain specific branches of science differed in that they had their own vocabularies and concepts: for instance, the language of theology, the language of magicians, alchemists, etc. Latin as the language of science with its established concepts was no longer satisfactory, the more so that other worlds existed – the Arab world, the Indian world. Therefore, the creation of an artificial language was to solve the issue of concept manipulation. The goal was a universal fundamental system of propositions, which could not be interpreted.

Can ideas (concepts) only be presented in a certain order? The classification of the ideas of the Catalan mystic Ramon Llull became an automatic sorting.

Although Llull's "computer" could be drawn on paper, the drawing was determined by a faulty "programming" language, which predetermined the repetitions of combinations. The most important thing, however, was that it was very primitive mechanics, although it was drawn. It was a peculiar multiplication table of concepts, which created sentences and could be constructed as a mechanical apparatus. Llull marked combinations of concepts by letters, almost as variants of syllogisms.

The creation of Llull's machine was promoted by the wish to engage in debate with the Muslims: convincing arguments that could be derived were needed. It can be maintained that the main goal was to convert the Arabs of Northern Africa to Christianity with the help of Llull's apparatus.

But Raymond Llull created only variants of the definition. This is illusionism, and a concept arrangement and combination apparatus could hardly have made an impression on the learned Arab. Algebra itself was analysed with the help of geometry; for a long time, Arabs used natural language to study algebra.

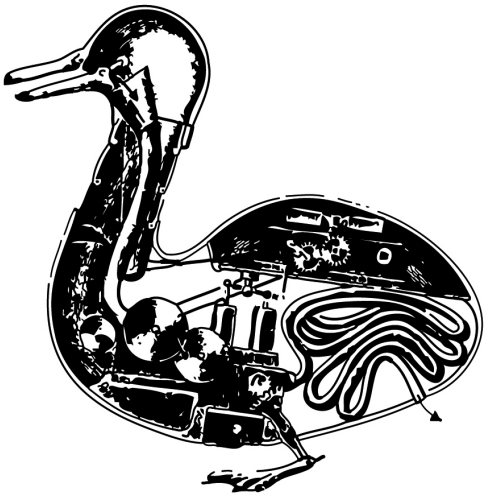
The idea of automatic derivation of concepts remained – a non-contradictory and non-interpretable apparatus was needed. Leibniz (Leibniz, 2004) repeated Llull's idea in a different form; only he wished to have a philosophic artificial language instead of a mystic language of coincidences:

> *"Moreover, we should be able to convince the world what we should have found or concluded, since it would be easy to verify the calculation either by doing it over or by trying tests similar to that of casting out nines in arithmetic. And if someone would doubt my results, I should say to him: 'Let us calculate, Sir,' and thus by taking to pen and ink, we should soon settle the question."*

The aim was to achieve what algebra already had. The main problem was how to base propositions on calculus. First, apposite symbols were needed for the calculation of propositions.

NOTATIONS: TWO TRENDS OF CREATING LANGUAGES

The creation of symbolic languages marked a watershed in two ideas: characteristica universalis vs calculus raciocinator. They were two branches of the creation of an artificial language, which later interconnected creating the computer. Number abstraction gives rise to the creation of an artificial language of the manipulation of ideas. Incidentally, a symbol can mark something that does not exist.



```
<...>
  HCkSsh ssh;
  BOOL success;
  const char * hostname;
  long port;
  long channelNum;
  const char * termType;
  long widthInChars;
  long heightInChars;
  long pixWidth;
  long pixHeight;
  long n;
  long pollTimeoutMs;
  const char * cmdOutput;
<...>
```

FIG. 1*: Double automaton*

If the new levels of language abstraction enable us to perceive the essence of things, then what other languages will we need? Will one language suffice?

Attempts to create a language of ideas were not successful again: the language of Leibniz ideas and charts resemble an exotic board game.

The idea of Leibniz's calculating machine inspired Gotlob Frege (Frege, 2002):

> *"This reproach, however, essentially overlooks the fact that my aim was different from Boole's. I did not wish to present an abstract logic in formulas, but to express a content through written symbols in a more precise and perspicuous way than is possible with words. In fact, I wished to produce, not a mere calculus ratiotinator, but a lingua charachteristica in the Leibnizian sense. In doing so, however, I recognize that deductive calculus is a necessary part of a conceptual notation."*

Lack of suitable symbols can restrict as much as syntax; Frege, whose two-dimensional symbolism of logic was hard to read from the very beginning is no longer in use will experience it too. Luckily, however, the notations of an artificial language are constantly renewed or new ones introduced, thus transforming language. Therefore, Frege's new language was easily reformulated using new symbols.

Bool's algebraic language will have the greatest impact on the creation of the computer itself, while Frege's language will influence programming languages.

Formal programming languages turned towards calculus raciocinator rather than Begriffschrift (concept language). In his turn, Frege created characteristica universalis. In his opinion, algebra is a good enough symbolic language; the shortcoming is that one still has to use words of natural language for formulating proofs.

The most interesting thing is that Frege constructing his language took many things from algebra. However, it was Frege who formulated the idea that universal language has to substantiate algebra too.

VAUCANSON'S DUCK AND LANGUAGE AUTOMATON

The aims to create automatons were similar to those of an artificial language: to comprehend the principles of functioning. It was only part of mechanical mysticism: the goal was to simulate natural objects mechanically, in the hope that they will operate later and will be made really well. When artificial programming languages were created, it became possible to adapt them for automatons.

One of the earliest examples of the illusion of living creatures was the eighteenth-century Vaucanson's digesting duck, moving and performing the main visible functions of a biological creature.

These imitation games later were adapted to simulate thinking process, especially when the first calculators appeared. From then on, it was believed that many functions performed by the human mind could be recreated in a simple automatic way. Finally, when language was formalised it became possible to animate mechanical and electronic creatures using imperative sentences.

The main transformation was that an artificial language that was created to analyze reality and describe it became a tool of creating and modelling new worlds. Now Vaucanson's duck can be constructed and it can operate on a screen.

Therefore, if you want to expose Vaucanson's mechanical duck ostensively by cutting it into two halves, then cutting a modern electronic machine you will get a pile of micro schemes, which will not reveal anything intuitively. A source code, which can check the limit of an automaton, is needed. Programming language is a way of simulating and testing Vaucanson's new duck **(FIG. 1)**.

ARTISTIC CODE. BREAK AND TEST THE LANGUAGE FROM INSIDE

Therefore, now Vaucanson's duck can be of three kinds: only mechanical and mechanically controlled by a symbolic system, i.e. by a computer with a symbolic system, and purely programmatic.

Now a machine is essentially a language automaton and can be opened with its own language. Very often, computers are used for the same principle as Vaucanson's duck – simulation. If a mechanical Vaucanson's duck were exposed by dissection then a language automaton could be exposed by an artistic code just as it is defined by computer scientist E. Dijkstra.

There is a very apt definition of current disassembling and testing of a machine. We could accept the broad and elegant definition of artistic code computer scientist E. Dijkstra formulated in the article "Introducing a course on program design and presentation" (Dijkstra, 2007):

> *"ARTISTIC: Here the program is an automaton created out of curiosity, with the intention of observing its behaviour when exercised. A program in this sense has the intellectual status of The American Flag – 'Let us hoist it and look how many salute.' An important comment: 'People in AI and in Experimental CS have a tendency to consider such "artistic programs" worthy objects of academic concern.'"*

Artistic code can damage and open both virtual worlds and artificial languages. It serves as a tool for discovering imperfections. Artistic code also performs the function of paradoxes. Automatons of symbolic systems can operate in various shapes hiding their code behind the sequences of different images or machines.

It might seem to be a matter of choosing an instrument. In fact, we choose a different level of immersion, of being in a system of symbols. It is one thing when we program, and quite a different matter when we use the metaphors of an already existing interface. Artists or scientists are faced with the same choice – what tool to choose, visual or linguistic (programming language) – when the result can be achieved both ways.

Dijkstra's definition of an artistic code is good for both artistic and scientific activities at the bottom of which is curiosity. Using an already existing interface or virtual reality, you are drawn into endless imitational games. If you start the analysis of the symbolic system with a programming language it helps to avoid manipulations. Artistic code tests the limits of the possibilities of an artificial language in a machine. Artistic code is also a kind of empirical experiment which tests the limits of an artificial language. If Matrix (*Matrix*, 1999) (a closed system) fighters did not fight the system with its own constructs, but looked for antinomy in it, there might be a better chance to destroy it. Artificial language is a reality, but its product is simulation. Only this reality is restricted by the functionality of a machine. After successful processing of Bool's sequences by a machine, an artificial language was locked in it. A language automaton can be tested and investigated by a code only in a machine.

Human is surrounded with smart or intelligent things with attached symbolic systems. However, it is possible to damage the apparatus itself if there are several codes of programming language. A symbolic system can be created or disassembled by its own methods; this is also a result of formalizing language. Despite all this discontent with language remains; and a symbolic language which was long in the making has become a prisoner of a machine.

REFERENCES

LEIBNIZ, G.W. (2004) The method of mathematics. Preface to the General Science [Online] Available from http://www.rbjones.com/rbjpub/philos/classics/leibniz/meth_math.htm [Accessed July 19 2010].

FREGE, G. (2002) On the aim of "Conceptual notation" In: Bynum T.W.(ed.) Gotlob Frege Conceptual Notation and related articles. 2nd edition. NY, Oxford university press. p. 91.

DIJKSTRA, E.W. (2007) Introducing a course on program design and presentation [Online] Available from http://userweb.cs.utexas.edu/users/EWD/transcriptions/EWD11xx/EWD1157.html [Accessed July 19 2010].

Matrix, 1999. Film. Directed by Lary and Andy Wachovsky. USA: Villag

Kathrine Elizabeth Anker

PhD STUDENT, PLANETARY COLLEGIUM,
CAiiA-HUB, PLYMOUTH UNIVERSITY, UK
kathrineanker@gmail.com

ON LIGHT – AND THE FLUX OF INFORMATIVE EVENTS IN NATURE AND TECHNOLOGIES

The aim of this paper is to create a thought experiment, that investigates the possible relation between light and human knowledge. I will present a syncretic approach in which I address the subject from several angles, that extend from the explanations of physical science into the aesthetic communication of technoetic art, and philosophical speculation. The article does not aim at producing final conclusions, but to explore the connection between light and mind, that has been a prevalent idea in the history of Eastern and Western cultures, and examine it in relation to a contemporary context.

In Christian theology light is understood as directly connected to human knowledge. Ancient Persian traditions such as *School of Illumination* offer an extensive framework connecting light to human knowledge and the idea of the soul (Suhrawardi, 1155–1191). Similar thinking can be found in the science-philosophy of Rudolf Steiner (educated physicist). In modern physics it might be difficult to see the relation between human knowledge and light – outside the fact that knowledge on light has been extremely important for science and technology. What happens today, however, in information technologies and areas of biophysics, is that the ability to detect and manipulate light at the scale of single photons gains increasing importance, at the same time as a connection between consciousness studies and studies of light seems still more relevant.

LIGHT AND THE UNIVERSE OF MATTER

At the outer, physical scale (noetic observation), light is what makes the world of matter accessible to us, and many understand eye vision as a dominant information source in human perception. The theory of the Big Bang, that has been the most enduring world view of our current time, is built upon the idea that light grew out of the plasma state of the early universe, and that the backwards reflection of light can tell us about the evolution of the physical universe. Furthermore, light (c) is a central source of measurement, particularly in astrophysics – as it is the most ubiquitous constant in the universe, according to modern physics. Matter absorbs and reflects light unequally, according to the fabric of the particular material, and the differences in reflection of light from different materials is what makes the world appear in color – in collaboration with our eyes, and particular chemicals and brain functions, of course. So our relation to light is central both in how we gain information about the world, and how we interpret it. But what happens if we discover that light is also an intrinsic, and perhaps essential, part of ourselves and our minds?

LIGHT AS BIO-INFORMATION

According to Marco Bischof (1995), DNA emits and absorbs light, and can account for a laser like transmission across cells of the global body due to its dynamic, spiral structure. Biophotons can become coherently structured, and operate in a variety of frequencies at many spacetime scales, which gives it capacity to carry high amounts of information "bits". Thus cells, tissues and organs are informed by light structures that work both locally and globally, much like an endosemiotic Internet, that further extends to environments external to the body. Mae Wan Ho (2008) and Bischof both suggest a relation between the biophotonic information system, and properties that we currently understand as consciousness. This brings us back to the relation between light and human knowledge.

If there is indeed such a relation, to take it actively into account, leads us into a moebius band logic, where there is no clear cut distinction between biology and philosophy, noetic (inner/quantum information) and noemic (outwards/matter information), large or small, mind or body, matter or non-matter. However, let's dare to slide around the moebius band, and start with some alternative explanations of the relation between light and matter.

THE SPACE MEDIUM

Erwin Laszlo (2004) describes a plenum of quantum information which he names the A-field (Akashic Field). The interaction between this field and the universal energy called "prana" (from ancient Hindu philosophy), results in processes of energy exchange, that could appear to us in part as "unpredictable" quantum behavior. This would be the plenum, that forms the interface between pure information and matter formations.

Physicist Milo Wolf (2008), much in line with Lazslo's thinking, claims that the electron is the most simple matter structure. Its basis is the behavior of one ingoing, and one outgoing spherical wave, that form a "standing wave". The standing wave has higher density at the centre, which could appear as a particle in a microscope. Matter, in this framework, would be appearances of communicating waves that oscillate in resonance in more and less dense points, creating lattices of wave interference, out of which "space" and space properties appear. One of the central principles of the Space Resonance Theory (SRT) is that waves in a common lattice seek the lowest possible common amplitude. This happens in atoms, molecular structures, and more complex structures forming the world of matter. In this framework, the basic principles of the space medium are: sensitive communicative awareness, and

behavior of interfering waves. What physicists have typically observed, when describing energy, according to Wolf, is signs of "energy exchange", not energy itself.

LIGHT AS COMMUNICATIONAL ENERGY EXCHANGE

According to Wolf, there are no photons. There are only processes of energy exchange, which – when they happen between the wave structures of the smallest measurable entities, the electrons – result in an emission of light, that appears as a photon in the matter realm. The speed of quantum waves is approx. 300,000 km/sec. Light, as it shows in the space resonance medium, would thus be the most direct expression of space medium information exchange – and it would follow the natural speed of EM (electromagnetic) waves as it appears. It "appears" in space as EM waves traveling mechanically from one spatial point to the other. But relating to SRT EM waves would rather be an overall sign of energy exchange happening in a communication between already connected oscillation points at the level of quantum information, which then appears as a spacetime event. As I see it, however, for the relation between quantum information and the space medium to make sense, there would have to be a looped interaction between the space medium, and pure information as well. Thus, space could potentially create effects in the information realm, and this would give the interactivity of the virtual some kind of time property in the moment that it relates to space and matter.

If we add the physical philosophy of David Bohm, what he understood as "enfolded orders" could be seen as a set of codes underlying the structure of space and space phenomena, in the form of quantum wave patterns. Thus, light as a sign of an energy exchange becomes information, not only as a function and property of its "material" existence (even if photons are massless), but also as a "sign" of codes from the enfolded order, that is furthermore not restricted to the particular substance in which its effects appear – because quantum relations are non-local, non-spatial, and can be entangled outside of ordinary spacetime laws. The same information pattern could, in principle, be distributed to a number of spacetime relations. There would be (hardly) no time (perhaps only 300,000 km/sec) and space between them – even if in space, they would appear in very different spacetime relations.

PHOTOTROPHY

Christa Sommerer and Laurent Mignonneau's work "Phototrophy" (1994) explores the relation between light and living systems. The installation presents an environment of Artificial Life, that allows for a relation between the evolutionary behavior of a (digitally) virtual world, and the behaviors of users in the so-called real world. The central navigation tool is a flashlight. The theme of the installation is based on the biological idea of "phototrophy", where plants have an intrinsic urge to rise and grow towards the sunlight. The virtual insects need light to grow, and to reproduce. But they can also be damaged by getting too much light. Thus, a sensitive balanced control is needed between users and A-life world. Even if the living creatures are insects and not bacteria or plants, we are reminded of the central relation between the cosmic rays of the sun and organic life IRL (In Real Life), by the ability of plants to bind and use solar energy chemically, and for sensation and perception. It is not, however, the biological concept of light as a life source that is of interest here. It is rather the symbolic implications of the interface that links behaviors, as light forms the path to interaction between the real and the (digital) virtual. Light functions as an oscillating "behavior" that connects the choices of the holder of the flashlight, with the development and behavior of the virtual insect species. Light, at the symbolic level, is then an interface between two different realities – or two different dimensions of reality by which light, to the artificial creatures, is the only visible sign of the world on the other side. This, we could relate to the above framework, in which light is the primary visible sign of energy exchange between virtual information and the space medium, and we could contemplate further on the implications of light as a sign of an intelligent, oscillating relation between enfolded and outfolded orders.

THE SPEED OF LIGHT

The Speed of Light by the London based artist group UVA (2010) is based on a series of installations, exhibited in London, April 2010. The purpose of the works is, according to the artists, to make the public become acquainted with the fiberoptic technologies, that are central for modern communication, particularly broadband Internet. Fiberoptics are based on very thin glass strands that allow for traveling light impulses to float and carry information. *The Speed of Light* is so arranged, that the voices of users, answering emotional questions into a microphone as they enter the warehouse, are closely tied to the light scenarios, that are present in different rooms of the four story building. Each room seems to have its own "story". One room offers a setting where a sofa and a TV appears in the darkness by sculptures made of light tubes, forming the image of a sofa, a TV table and a TV. Another room allows for an experience of lasers, forming geometric patterns in the air medium as they interfere by the linear qualities of coherent light coming from lasers in different positions of the room. The installations form a constant interplay between light and darkness, between light and space, and between sound and light. Thus, they present a variety of functions and qualities of artificial light connected to the use of fiberoptic technologies – and users can contemplate relations of light, matter and information relations at the scale of the gross senses – and perhaps, indirectly, gain insights of processes happening at the level of the fine senses – the levels of quantum information relations.

LASERS IN HARDWARE AND WETWARE

Bischof describes photon networks between cells, where the laser properties are distributed by functions in the DNA structure that allow for storage, amplification and transmission of biophotons – which shows some conceptual relation to contemporary attempts to create nano photonic crystals (as one example), that are based on cavities in particular materials in which single photons can ideally be captured, manipulated, and used to structure information on behalf of the laser properties. The vocabularies of biophysics, and the physics of photonic technologies show a line of resemblance (however not equality) that implies a possible mutual influence, similar to what we have seen in the historically earlier relation between computer science, cybernetics and the cognitive sciences.

Bischof, however, emphasizes the ability of light to operate in many frequencies and wavelengths in complex dynamic structures, which could account for the difference between the living organism versus the less complex information patterns of "dead" material. He suggests an evolutionary line moving towards expansion of complexity in light wave structures in living organisms. In this line of thinking, "dead material", even in optic technologies, would always show less degrees of complexity, than living organisms. The organism of a human being and her relations to nature, including other human beings, would simply have more complex and more dynamic "broadband canals" (internally and externally) for transmission of information, and the organic network would have the capacity to carry more "bits", than is the case with information networks based on fiberoptic technologies.

INFORMATION FLOW IN NATURE AND TECHNOLOGIES

If we investigate the idea of semi-closed systems interacting in nature, then perhaps we see a macro effect of energy exchange in the ecological relation between cosmic solar rays and living organisms on planet Earth, and a micro effect of energy exchange happening by photons emitted and absorbed by human DNA in cell nuclei – and perhaps a fractal similarity in the properties of information distribution and structure by pure information causing energy exchange at both scales. And we see our cultural interpretations of such connections in the areas of optics and photonics. As Bischof indicates, the sun seems to have more functions than merely providing light for the sensuous eye, for vitamin D generation, for photosynthesis, and for heating the globe. There might be a further moebius band connection between macro scale and micro scale light information that further builds upon the dynamic interface of the resonant space medium in which matter appears – and of which all we have detected so far are the outfolded energy exchanges of measurable light (EM-spectrum). If it is so, we can see ourselves immersed in a universe of multifrequent, vibrating information, that both informs and is informed by the space medium, which effects us at micro and macro scales, and is based on pure information – the reverse logic of which we have yet to discover.

REFERENCES:

BISHOF, Marko (1995): Biophotonen: Das Licht in unseren Zellen. Zweitausendeins.

BOHM, David (1980): Wholeness and the Implicate Order. Routledge.

CLEGG, Brian (2001): Light Years: an exploration of mankind's enduring fascination with light. Piatkus.

HO, Mae Wan (2008): The Rainbow and the Worm – The Physics of Organisms. World Scientific Publishing, Co.

KIRKLAND, Kyle (2007): Light and Optics. Facts on File Books

LASZLO, Erwin (2004): Science and the Akashic Field – An Integral Theory of Everything. Inner Traditions.

RAYMER, Michael G. (2009): The Silicon Web. Physics for the Internet Age. Taylor & Francis.

SOMMERER, Christa and MIGNONNEAU, Laurent (2009): Interactive Art Research. SpringerWienNewYork

WOLF, Milo (2008): Schrödingers Universe. Outskirts Press.

WORK:

– Christa Sommerer and Laurent Mignonneau: Phototrophy. 1994. http://www.interface.ufg.ac.at/christa-laurent/WORKS/FRAMES/FrameSet.html Date of access: June 26, 2010

– UVA (United Visual Artists): The Speed of Light. 2010. http://vminstore.com/speedoflight/ Date of access: June 26, 2010

Artifist

CAROLINE COTTEREAU
GAËTAN COTTEREAU-MEURÉE
VALERY MEURÉE

AFFILIATED TO "MAISON DES ARTISTES"
INSTITUTION. PARIS, FRANCE
artifist@hotmail.com
www.myspace.com/artifist

NEUROSPACE CONSCIOUSNESS

Cyberspace reality (Internet, Second Life, or MMORPG) is part of our everyday life. Interactive and immersive digital technologies in their next application, converge on a matrix which could be compared to shamanism.

Rather than considering shamanism as a primary archaism, couldn't it be a sophisticated, dreamlike and cognitive technology? A culture medium, offering conceptual models, transposable in the evolution of "cyberspace" reality?

Today, "telepathy" assisted by computers belongs to reality. Prof. Kevin Warwick's researches on neuronal implants move in this direction. Sony has taken out a patent concerning a technology allowing to transmit directly sensorial information to the brain, without the necessity of implants. We'll soon play network games connected by thought. Soon, our consciousness will be directly interfaced with data banks and network cyberspace universes. This paradigm is very close to shamanism.

It becomes fascinating to imagine shamanic and cyberspace universes could mingle in a same reality. A shaman, or a psychonaut could be connected through a universal imaginal form of consciousness, and at the same time with the global Internet matrix. Transfering information from one universe to another.

Our work is in keeping with that process. Using specific neuromediators, such as pinoline as a medium (pinoline is a neuro-mediator which is closely linked with dream and modified states of consciousness. It is considered to be a vehicle, a mediator of other realities). As Prof. Warwick considers the transmission of the effects of many chemical mediators inside a system in order, for example, to enable an organism to benefit, at a distance, from the good effects of a medicine, without ever absorbing that medicine. We then spread our work into/through the Internet network, as well as in the "Neurospace transfusion" performance project.

We try to enable the premises of a bridge between realities to create a unified cognitive environment.

WORKS

Brain Skin Medium

The skin and nervous system both come from the same embryonic sheet. After that, they keep linked, especially because of common neuromediators. In concrete terms, the result is that changes in the brain (for example, a nervous breakdown) lead to modifications of the skin (for example, inflammation).

Our work follows the opposite process: in applying neuromediators on/in the skin. We consider the latter as an interface, a nervous prolongation connected with the brain. Applying specific neurotransmitters, such as pinoline, adrenaline, dopamine, serotonine, *Ayahuasca* or Peganum (harmala extract) on the skin, results in them being absorbed through their respective receptors concerning skin cells and so on. An informal modification which is, in the end, identified by the brain.

The visualisation of the inscription on/in the skin (reaction of the fluorescence when exposed to ultra-violets) amplifies the integration of the informal modification on the brain, while permitting a sudden awareness of this one.

Doing corporal painting when using neuromediators as pigments (each neuromediator having a particular fluorescent marking), enables us to play on the conscience/brain informational assimilation. The drawing as information, amplifies the resonance of this assimilation.

The use of "ultraviolet light", to reveal corporal paintings done with neuromediators, is common in spectrophotometry and in images by fluorescence "histofluorescence", which enables us to determine the presence of these same neuromediators, concerning specific receptors in specific analysis.

In making visible this corporal communication, we want to amplify the conscient integration of the biochemical phenomenon, and spread the informational network to the brain of the spectator, being itself of a chemical nature.

The pinoline (and other b.carbolines endogens), mediators of the central nervous system, is closely linked with dream and modified states of consciousness, and is found implicated through the different stages of sleep, as well as during N.D.E, transes induced meditation, considered to be vehicles, mediators of other realities.

Ayahuasca is a brew employed for divinatory and healing purposes by Amerindian shaman of the Amazon culture. This brew contains some Beta-carboline derivative, like harmine, th-carboline, harmaline and produce a realogenic or a modified, states of consciouness.

Peganum harmala, is an plant native from the eastern Mediterranean region east to India, it is employed for divinatory, healing and as an entheogen in the Middle East; it contains beta-carbolines derivative, like harmaline, harmine, th-carboline and produce a realogenic or a modified, states of consciouness.

We use these three plants, or molecules, to reveal the interface function of the skin-brain by confronting it with psychoactive endogen and exogen of the man. A pro-human relation communication and inter-species.

IMAGINAL NETWORK

Concept-strategy

Creation of connexions by the layout between institutions (public and private) using an existing network, connections

FIG. 1: *Tattoo work with pinoline/harmaline under pigments, in the end of one year of peganum harmala strict daily diet*
Photogaphy, without & with ultra violet light radiation. Neuromediators used: Pinoline and peganum harmala extract "harmaline, harmine, th-betacarboline (Neuromediators interspecific)". 2009.

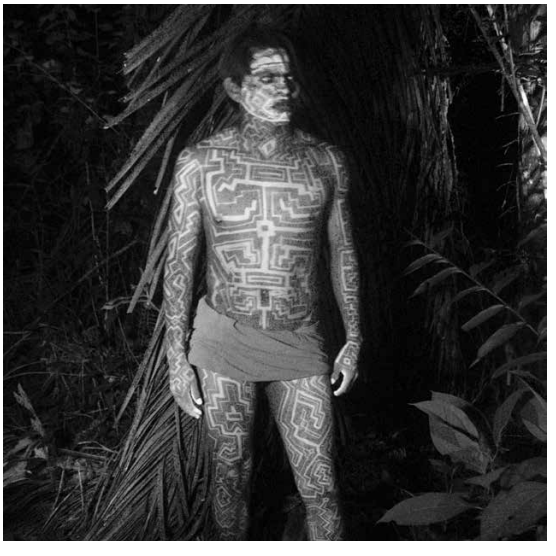


FIG. 2: *Corporal painting created in Peruvian Amazonia with Mike Sinuiri (Shipibo shaman); and with the participation of Jhefferson Saldaña Valera (Shipibo artist and shaman)*
Photography, ultraviolet radiation. Neuromediators used: ayahuasca "harmine, th-carboline, harmaline (Neuromediators interspecific)" 2006.

FIG. 3: *Spray of realogenic neuromediator in the streets of Paris. Bank of France*
Photography. Neuromediators used: dimethyl-serotonine 2004–2010.

which, as a whole, will form a new system: an imaginal symbolic network system. One after the other, these connections will draw our own neuronal structure. This one will develope in the same way as the one between neurones/ receiver diffuser points.

The connections will be carried out, using a mixture consisting of a conductor: a physiological salt solution and a neuromediator, a realogen or an inter-specific neuromediator; e.g:

- Beta-carbolines (pinoline, tryptoline …)
- Tryptamine (5Meo-dmt, dimethyl-serotonine …)
- Phenethylamine (nor-adrenaline, adrenaline …)

The purpose of the use of realogens or inter-specific neuromediators as mediators, is to modify the integration of information by a filtrage/decoding of its contents and to reach a new type of information (a different angle). The targets will all be private or public organizations; their research centers, their executive assemblies, their legislative assemblies, their information centers (receiver (diffusers)) etc.

The project will start with the public institutions, the private institutions, and finally, the tracing of connection between public and private institutions. This project will initially spread in Paris, to extend later to wherever it is possible.

Each realogen has a specific signature and a specific implication, use a placebo will be nonsense, without intentionality.

PROJECT

Neurospace transfusion

The performance shows a live blood transfusion between two compatible persons, who are playing a game proposing an immersion inside a network virtual reality. Each player is put on a drip with a solution of sodium chloride and an interspecific neuromediator: the dimethyl-serotonine for the first player and pinoline for the second; each dip is personal and is regulated by each player (these two neuro-mediators are psycho-active substances, naturally present in the human system). The direct transfusion creates an open circuit between the two protagonists, a binomal blood network which leads to an exchange of information. The act of playing starts many physiological reactions which are transmitted from one player to the other, via all the endogen chemical mediators through blood circulation. The action of the perfused psycho-active neuro-mediators whose dosage is self-managed, alters at first for the receiver, the physiological reactions, while continuing to operate on the psychical activity as a doping substance. Secondly, the psychotrope action of these exogene neuromediators, entering the second protagonist's system, leads to a psychic pertubation, caused the potentiality which comes out from the meeting of the two neuro-mediators. This psychotrope influence determines a bio-chemical strategy to be adopted by the two protagonists.

We have imagined, as a conclusion, a game transposed in a personal imaginal environment, influenced by the transmission of endogene, exogene, internal and external mediators. This transposition will follow a creation, developed on the basis of an association of the two personal environments, inside a cybernetic universe.

This performance, which should be made in real time during exhibitions, stands on the limits of the possibilities of direct applications, showing the common vision we share with Prof. Warwick on the subject, increased by a corelation with shamanism. We are working with a surgeon on the subject, from a strictly technical and medical point of view. The operation in fiesable, but from an ethic point of view, the debate is to be started.

Our work is an initiative of unification of the endo and the exo. We try to set some artistic environement to be our own cognitive experimental models which our "collective" consciousness to pierce the border separating the outside and the inside, and finaly, to be integrated into the principle of a unified multiple reality.

From this angle, the consciousness can be thought as a spiritual instrument. It is a méta-technology becoming creation. Human being stretches out towards much more than the experiment of the mystic ecstasy "ex-stase" but becomes an interface of infinite impregnation until incorporation theoretically, En-Stase.

Elif Ayiter

SABANCI UNIVERSITY, ISTANBUL, TURKEY
THE PLANETARY COLLEGIUM, CAiiA-HUB, PLYMOUTH, UK
ayiter@sabanciuniv.edu

CONSTRUCTING TRANSFORMATIONS: <GROUND-C> *A Learning Strategy for the Metaverse*

INTRODUCTION

In his book *Exodus to the Virtual World* economist Edward Castranova predicts that a migration of considerable proportions from the physical realm to three dimensional, online worlds is to be expected within the next few decades. The anticipated outcome would be a demographic landslide of significant enough socio-economic impact to constitute a need for compelling changes in socio-political and economic strategies not only in the virtual but also the physical realm (Castranova, 2007).

Since creative practices are inextricably intertwined with the socio-cultural milieu within which they flourish, it would follow that vast change, not only in terms of the actual creative output itself, but also in terms of the context within which this creative output is generated, is to be expected.

Art Schools, be they physical or virtual, may need to adapt their learning strategies in the face of the oncoming landslide predicted by Castranova: While it may be premature to relinquish present day art educational methodologies in their entirety, nonetheless provision for change needs to be incorporated into the present day curriculum. It appears to be evident from present day creative activity embarked upon by the Residents of a metaverse such as Second Life® that this change will not only involve the attributes of the artistic output itself, but will also need to take into account the changes in the behavior of the creator/users of artifacts as well as the usage and utility of the artifacts themselves. The locus itself; i.e., participative synthetic worlds will also need to be taken into account. Furthermore, an entirely novel student profile, comprised of mature player/learners who wish to further their abilities for enhanced virtually creative participation, may also find themselves at the doorsteps of art educational institutions within a foreseeable future.

THEORIES OF LEARNING

The Groundcourse

Combining cybernetics and constructivist educational theory, The Groundcourse created a learning environment which would "*enable the student to become aware of himself and the world, while enabling him to give dimension and substance to his will to create and change*" (Ascott, 2003); achieved through a breaking down of preconceptions related to self, art and creativity. As such the learning strategy that was employed fostered the rethinking of preconceptions and fixations with regards to self, society, personal/social limitations, art and all the ensuing relationships through a carefully thought out and coordinated range of assignments and exercises that entailed behavioral modification and change.

> *"The Groundcourse places the student at the centre of a system of visual education designed to develop in him awareness of his personal responsibility towards idea, persons and the physical environment such that he may contribute to a social context within which his subsequent professional activity may become wholly creative and purposive." (Ascott, 2003)*

Ascott utilized the creation of new personalities as aids for behavioral change during the Groundcourse years. This corresponds to Role Play in online virtual worlds today. Cyberpsychological research substantiates the importance of the acquisition of novel persona, indeed the acquisition of many alternative selves, for bringing about behavioral change not only within the virtual environment itself but also, by extension, in Real Life. In light of these correlations the author proposes a novel art educational strategy; custom tailored for online, three dimensional virtual worlds; based upon the Groundcourse's educational philosophy. Whilst Ascott's system is being placed at a pivotal point, Jack Mezirow's Transformative Learning as well as research conducted in Cyberpsychology and Cyberanthropology are also given prominence in the formulation of this proposal.

Transformative Learning

Perspective Transformation, which is based on psychoanalytic theory and critical social theory, has been developed by Mezirow during the last quarter of the twentieth century. According to Mezirow "*Perspective transformation is the process of becoming critically aware of how and why our assumptions have come to constrain the way we perceive, understand, and feel about our world; changing these structures of habitual expectation to make possible a more inclusive, discriminating, and integrating perspective; and, finally, making choices or otherwise acting upon these new understandings*." (Mezirow 1991, 167)

Transformative learning, which specifically addresses lifelong learning, is a process of getting beyond gaining factual knowledge alone to instead become changed by what one learns in some meaningful way. It involves questioning assumptions, beliefs and values, and considering multiple points of view. In theorizing about such shifts, Mezirow (1995) proposes that there are several phases that one must go through in order for perspective transformation to occur, suggesting that this happens through a series of phases that begin with the disorienting dilemma. Other

phases include self-examination, critical assessment of assumptions, recognition that others have shared similar transformations, exploration of new roles or actions, development of competence and self-confidence in these new roles, and reintegration into life on the basis of new perspectives, "*concluding with a changed self-concept*" (1995).

While Grabov (1997: 90) views Transformative Learning as an "intuitive, creative, emotional process", for Boyd, transformation is a "*fundamental change in one's personality involving the resolution of a personal dilemma and the expansion of consciousness resulting in greater personality integration*" (Boyd, 1989, 459). Boyd emphasizes discernment as an integral component of the learning process (Boyd and Myers, 1988), calling upon sources such as symbols, images, as well as archetypes to assist in creating values of discernment as aids to personal strategies of meaning as to what it means to be human (Cranton, 1994).

It is noteworthy that both Ascott and Mezirow seem to have placed the notion of a "changed self-concept" in juxtaposition to educational strategies at the heart of their inquiries. A further parallel lies in the emphasis which both Mezirow and Ascott place upon lifelong learning: As early as 1966 Ascott (2003) alerts readers to the emergence of "a new, leisured class" that will be involved in creative pursuits, furthermore a class which falls outside of the boundaries of traditional art educational practice in that it will in all likelihood be comprised of learners of diverse age groups. Current practices of creative participation and sharing via www2 domains seem to validate this early claim of Ascott's, who structured his learning system as a fluid, symbiotic construct within which diverse learner groups could be accommodated.

THE METAVERSE

Metanomics and the (Virtual) Three Dimensional Collage

What makes a search for unorthodox strategies for art educational content particularly relevant at this juncture is the continued success of Second Life®, a three dimensional virtual world that allows its users to retain property rights to the virtual objects they create in an online economy. One of the founding strategies behind Second Life® was the notion that the world would draw a cadre of elite content creators whose endeavor would be noteworthy enough to attract sizable numbers of players into joining the world to make use of their output (Castranova, 2007). While this early vision does indeed seem to have materialized, an unexpected development also seems to be in the offering: What makes the world particularly compelling as a platform of creative expression is the largely unstructured nature of the creative activity, which the first order user generated content seems to breed quite spontaneously in its turn.

Creative output in the metaverse becomes interactive in the truest meaning of the word. Far from being work meant to be viewed and admired, but not to be interfered with in any fundamental way, design output as well as art objects are manipulated, re-structured and combined with others to suit the needs of the present owner; to suit specific purposes, such as props in playful activity, photography and video sessions, environmental decor and, of course, avatar appearance. The roles and stories enacted often find their origins in the combined visual elements of the assemblage/collage which seems to have instigated the process of make-belief: Thus, akin to their Dadaist predecessors, the assembly of unrelated objects seems to go as noteworthy a distance virtually as they do physically in the instigation of associative creativity. Indeed possibly acceleratedly so in virtuality, when the contributions which a coded domain can bring to bear upon the expression of the fantastical is also taken into account: Unconscious processes, which may disclose themselves in diverse creative manifestations, particularly as masks or persona created for Role Play sessions, are par for the course in the synthetic lives of users and extended user groups. Indeed, the pull of constructing alternative states of being through these virtual collages seems to be so powerful that it would not be too much of an exaggeration to claim that the pursuit of these is at least one of the key joys of many a synthetic existence.

CONSTRUCTING MULTIPLE IDENTITIES: THE ALT AVATAR

Possibly the most compelling usage of the above described conglomerations is during the construction of multiple identities: Alt avatars are secondary accounts created by a single user in a virtual world. These secondary "alt" accounts are created to embody alternative selves "*in which the more fundamental personality of the real person is still driving in the background but filtered through a different surface persona*" (Boellstrof, 2008). Alt avatars would appear to be created with the aim of exploring the multiple facets of a singular person. This task is often accomplished through a complex network of social interactions: In some cases alt avatars will have entirely autonomous social lives, moving in circles that can be similar or very different from those of the main avatar. However, equally common are shared social lives between the main avatar and any number of his or her alt avatars. It is when these joint lives involving multiple facets of one single user are enacted that the appearance of the alt avatars begins to acquire considerable significance, especially when placed in juxtaposition to the appearance of the main avatar:

Typically the main avatar is designed to look like the idealized version of the Real Life persona. Conversely, alt avatars can manifest in vastly different configurations. They can be of the opposite sex or even often androgynous and may possess non-human attributes. Furthermore, avatars can also be expert shape shifters, manifesting in many diverse forms even within a time span comprised of a few hours, if not indeed minutes. These deviations from the physical attributes of the human handler can be so pronounced that virtual world residents often refer to their alt avatars as a "costume" or a "mask", thus emphasizing the difference between their Real Life selves and the alternative persona they project through the alt avatar.

The following questions constitute the backbone of the author's investigation: Can the diverse persona embodied in alt avatars be utilized in a manner similar to Roy Ascott's learning strategies during the Groundcourse years? Can Role Play involving virtual selves, and indeed multiple virtual selves, bring forth behavioral change, which may open the floodgates of creative enablement? Can educators develop life long learning systems which *"start out with a disorienting dilemma and culminate into a changed perception of self"* (Mezirow, 1995) by integrating into their strategies

the processes involved in the creation of alternative (virtual) states of being? Would the significance of creative output be likely to shift from "object" to "subject" as a result of such considerations?

CONCLUSION

A compelling outcome of creative activity in a synthetic world is the behavioral change "the created" effectuates upon "the creator." Yee and Bailenson have reported upon the relevance of the physical attributes of the three dimensional avatar, finding these to be significant predictors of a player's performance. However, truly startling is also the finding that according to The Proteus Effect, not only does the appearance of the virtual body change how dyads interact with others in the online communities themselves; this effect is indeed powerful enough to be carried through to subsequent face-to-face interactions amongst the physical handlers of the avatars participating in the experiment (Yee, Bailenson, 2009).

In *Exodus to the Virtual World* Castranova alerts his readers from the onset to a book of a speculative nature. However, given the solidity of his assessment tools it would not be too imprudent to regard his predictions as anything other than informed deliberations, which it might behoove his readers to take into serious consideration: Even if his cogitations come to bear fruit only partially, humankind may find themselves living in a vastly altered world, or indeed in multiple worlds, "synthetic" and "real" simultaneously. While the impact of his predictions would be considerable in all aspects of human endeavor, the effects upon artistic activity may well be of enough moment to cause changes upon the fulcrum of the field itself; possibly even rendering the very nature of artwork itself as agent of inner change rather than externalized object. This text has thus attempted to raise some of the issues related to a need for restructuring art educational curricula, particularly those practiced in metaverse environments at the present time, positioned within the context of two pre-existent educational strategies which raise questions regarding the overall purpose of learning activity itself.

REFERENCES

ASCOTT, R., SHANKEN, E. (ed), (2003) Telematic Embrace: Visionary Theories of Art, Technology and Consciousness, University of California Press. Berkeley, CA.

BOELLSTORFF, T., (2008), Coming of Age in Second Life: An anthropologist explores the virtually human Princeton University Press, pp. 128–134.

BOYD, R. D., and MYERS, J. G., (1988) Transformative Education International Journal of Lifelong Education 7, no. 4, pp. 261–284.

BOYD, R. D., (1989) Facilitating Personal Transformations in Small Groups, Small Group Research, Vol. 20, No. 4, pp. 459–474

CASTRANOVA, E., (2007) Exodus to the Virtual World, Palgrave MacMillan, NY.

CRANTON, P, (ed) (1997) Transformative Learning in Action: Insights from practice. New Directions for Adult and Continuing Education No. 74. San Francisco, CA: Jossey-Bass

GRABOV, V., (1997) The Many Facets of Transformative Learning Theory and Practice. Transformative Learning in Action: Insights from practice. New Directions for Adult and Continuing Education No. 74, San Francisco, CA: Jossey-Bass, pp. 89–96.

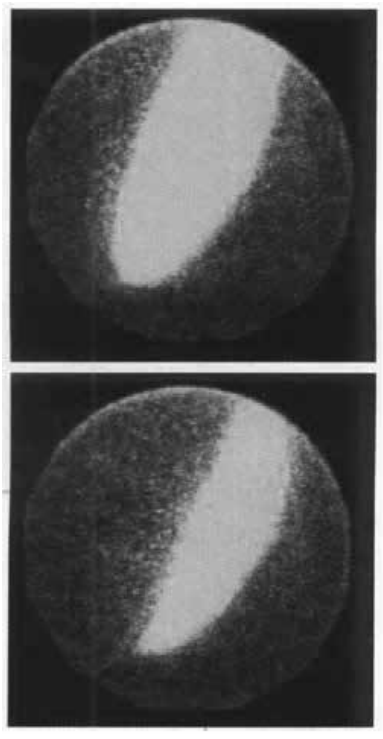
MEZIROW, J., Transformative Dimensions of Adult Learning. San Francisco, CA: Jossey-Bass, 1991.

MEZIROW, J., WELTON, M. R. (ed), (1995) Transformation Theory of Adult Learning, In Defense of the Lifeworld, New York: SUNY Press, pp. 39–70.

YEE, N., Bailenson, J., (2009). The Proteus Effect: Implications of Transformed Digital Self-Representation on Online and Offline Behavior Communication Research, pp. 36, 285–312.

Marco Bischof

INSTITUTE FOR TRANSCULTURAL HEALTH SCIENCES, EUROPEAN UNIVERSITY VIADRINA, FRANKFURT (ODER), GERMANY,
PRESIDENT OF THE INTERNATIONAL INSTITUTE OF BIOPHOTONICS, NEUSS, GERMANY



MAN AS A COSMIC RESONATOR
– *Re-Imagining Human Existence in the Field Picture*

INTRODUCTION

It seems to me that science and the arts have a common task in our society: re-imagining reality. Quantum theory as well as phenomenology have postulated that we can only speak of reality as the reality consciously experienced by us. In a certain respect, reality is indeed constructed or even created by us. To which aspects or features of reality we pay attention, determines our picture of reality and therefore also our conscious perception of reality, which in turn also governs our overt behavior and is the basis of the organization of our society. However, I believe that we unconsciously perceive much more than that, and this much fuller unconscious awareness forms a constant source for impulses for change in our conscious perceptions, worldviews and behaviors. By pointing out emerging possibilities, direction attention to hitherto unattended/unconscious features, and supporting and enhancing emerging new sensitivities science and the arts help unconscious perceptions/potential realities to become actualities, and therefore help create new social realities. In this sense, science is also an artistic endeavor. More recently, the described process can be observed at the example of the rise of the field picture of reality.

THE RISE OF THE FIELD PICTURE OF REALITY

Although it is probably as old as human history, the field view of reality and human existence has long been eclipsed by the predominant view of reality and our existence as solid objects. In classical physics, reality is conceptualized as an ensemble of solid objects composed of elementary 'building stones', separated by empty space and interacting by physical forces across empty space. Up to the 19th century, field awareness has remained largely unconscious in science and public awareness (mainstream culture), and has not been represented in it; the picture of reality and ourselves has been determined by the solid object view and therefore behavior has been as if the field aspect did not exist. However, the field view, like many other suppressed aspects of reality, has been preserved outside the cultural mainstream, in marginal subcultures like the artistic and cultural avant-gardes, alternative religions and alternative medical circles, and in the "parasciences". Subcultures always preserve the awareness of neglected aspects of reality that the cultural mainstream pays no attention to.

Since the late 19th century, however, the field imaginations have emerged from their marginal position in public awareness and have shifted into a more prominent place (Asendorf 1989; Bischof 1995, 2002, 2003; Clarke & Henderson 2002). In science, the discovery of radioactivity and electromagnetic fields transformed earlier subcultural notions of animal spirits, etheric fluids, animal magnetism (mesmerism) and the like into acceptable concepts. Biologists like Paul Weiss and Alexander Gurwitsch proposed that "biological fields" play a crucial role in the development of organisms and thus suggested that human existence had, in addition to the solid body, a field component reaching beyond the body's boundaries – a view that most pre-scientific cultures had embraced. The discovery of zero-point energy rehabilitated the discounted ether in the form of a new "quantum ether", the "vacuum". At the same time, modern art also presented a field picture of human existence and imaginations of the role of "streams and radiations" in the human interaction with the environment (Henderson 1988; Asendorf 1989; Clarke & Henderson 2002). A famous example is Marcel Duchamp's painting "Portrait of Dr. Dumouchel" (1910) where the artist surrounds Dumouchel's hand with a kind of aura.

More recently, biophysics has shown that all living organisms, including humans, are permeated and surrounded by a weak electromagnetic field, composed of optical ("biophotons", 200–800 nm), radio, microwave, and ELF frequencies (Bischof 1995). Based on the experimental evidence for the existence of biolectromagnetic fields or "biofields", new biophysical models for the human organism have been developed which view human existence as multidimensional and include one or several levels of a nonmaterial "field organism" (see, for instance, Ho 1993; Bischof 1995, 2003).

The experimental confirmation of the Einstein-Podolsky-Rosen (EPR) correlations, i.e., of the phenomenon of entanglement, gave us a picture of reality as a holistic web of interconnectedness based on a field-like "vacuum" state.

A few years ago, Weak or Generalized Quantum theory (WQT, GQT) has been developed to extend quantum-theoretic description to quantum-like phenomena, including complementarity and entanglement, in other fields than physics, such as psychology, consciousness research, parapsychology and healing (Atmanspacher et al 2002). GQT may well serve to broaden the application and acceptance of the field picture of reality.

THE PARTICIPATIVE WORLDVIEW

In this picture the substantiality of the world almost vanishes while relationships become central; locality, individuality and separateness are less important than non-locality, wholeness and connectedness. The picture shifts from an "objective worldview" of a world composed of separate objects seen only from the outside and interacting mechanistically by their surfaces, to a field worldview where there are no separate objects and no clear boundaries. The new worldview is a "participative worldview", as it constitutes also a shift from viewing the world from the outside to experiencing everything from the inside: therefore with the field view the psychic aspect of reality is becoming predominant, because the experiencing subject posits itself not anymore outside the world, but becomes part of it. It has been understood that the ecological view of interconnectedness cannot be restricted to the material level, but must be extended to the nonmaterial, psychic and mental, levels; the world of interiority is opened up and does not remain anymore restricted to the inner space inside our skulls and bodies. The whole reality assumes the quality of interiority, becomes a psychic space. Just as a reminder: in the present mainstream view (the Cartesian worldview) interiority (subjectivity) is allocated exclusively to the inside of our bodies (or skulls), but not allowed to be attributed to the outside world, while exteriority (objectivity) is allocated exclusively to the outside world and not allowed to be attributed to emotions, thoughts, imagination etc. Thus, the distinction between inside and outside, objective and subjective is blurred, becomes obsolete. The universe becomes alive.

MAN AS A COSMIC RESONATOR

According to the physiologist Rainer Sinz, the human organism must be considered as a system of coupled and highly coordinated oscillators, rather than as a solid and static entity (Sinz 1978). Alexander L. Chizhevsky, Giorgio Piccardi and William F. Petersen, among others, have made it plausible that this oscillating system is constantly resonating with influences from the terrestrial and cosmic environment (Chizhevsky 1930, 1968, 1976; Piccardi 1962; Petersen 1947, see Burns 1997, Bischof 2003). The Universe can be considered as a reverberating space, through which ripples constantly are running back and forth. Every being is (at least unconsciously) aware of these ripples and is affected by them. For this reason, Petersen calls man a "cosmic resonator" (Petersen 1947). In the sense of Generalized Quantum Theory this cosmic resonance must be conceived not as a merely material, but holistic resonance with the universe, including mental and psychic interconnectedness. In contrast to other beings, man is also the only one who can hold on to this resonance (memory), delay his reaction to it, reflect upon it, and decide to react differently – he is able to consciously form his interaction with the universe and thus form and develop himself.

HOW THE FIELD VIEW MAY TRANSFORM OUR SOCIETY

The rise of the field view may well transform our society, and change not only our picture of reality and human existence, but transform social life and human relationships. An increasing number of people are today on the threshold of perceiving subtle fields around their bodies, in interpersonal relationships and in the environment, and in the attempt to cope with their budding and insecure perceptions they are looking for guidance in esoteric literature and parascientific publications. However, there is still a long way to go until the field perspective can be established as a part of mainstream experience and normal everyday practice in our society. The extension and differentiation of personal awareness and the development of an appropriate language for the communication about these novel experiences are necessary for establishing an everyday practice in the handling of these field experiences. The fact that nowadays many people speak in an undifferentiated way about concepts such as qi, prana, orgone, reiki, and biophotons as if they were the same thing, clearly demonstrates that the ability to express themselves about and to differentiate between these ever changing states, half-manifest and therefore difficult to grasp, is only present in budding form in most people.

If we can successfully achieve again a kind of natural competence in dealing with the manifold manifestations of subtle fields and if we can establish and cultivate this competence as a value accepted by the society, this could be considered as a remarkable collective cultural achievement. It would constitute an enormous collective learning process and entail the development of a novel understanding of interpersonal relations and the workings of groups and the whole society in terms of fields and the interaction of fields, as I have started to outline in a number of publications (Bischof 2007a, b, 2009). It certainly would have a deep impact on the quality and nature of human relationships. The opening of man for the field realm could well turn out to be a new stage of human evolution. The fact that we become conscious of the field level of our relationships where we are not cleanly isolated from each other but rather very much open to others and entangled with them, entails that we will not only have to accept responsibility for the restricted domain which is conscious to our limited ego, the world of the objective and the effectively

and consciously executed actions, but also for our intentions, thoughts, imaginations and feelings, in other words: for the state of our "biofields". The state of our inner world can therefore not remain a private matter, because it has an impact on other people and thus is also their concern. On the other hand we participate, on the level of our fields, in the field state of other people and living beings whose inner world is open to us and influences us. Of course, such a development is already under way in particular subcultures of our society, but it would enter a new dimension if it would happen on a broader basis and in a more conscious way. Methods of self-cultivation by means of which every person can train their awareness of interpersonal fields, cultivate the sensitivity for the "space in between" and regulate and transform their own bodily, emotional, and mental states, such as yoga, meditation, breathing therapy, Eastern martial arts, various relaxation techniques and psychophysical exercises, probably will play a prominent role in such an enterprise (Bischof 2010). Sociologists like Anthony Giddens and Ulrich Beck have found that human identity in postmodern society is characterized by individualization, a reflexive and fluid personality, multiple and changing affiliations, loss of trust in authorities and institutions, critical and creative handling of traditions, the primacy of everyone's own experience, autonomy, self-care, self-fashioning, and an autotelic (self-directed) self. One's own personality and lifestyle thus become a lifelong art project for every individual, and the constant self-fashioning of oneself as a living "Gesamtkunstwerk" by means of self-cultivation techniques may well take a central place in society.

REFERENCES

ASENDORF, C 1989, Ströme und Strahlen – das langsame Verschwinden der Materie um 1900, Anabas, Giessen.

ATMANSPACHER, H, Römer, H, Walach H 2002, Weak quantum theory: Complementarity and entanglement in physics and beyond, Foundations of Physics, vol. 32, pp. 379–406.

BISCHOF, M 1995, Biophotonen – das Licht in unseren Zellen, Zweitausendeins, Frankfurt.

BISCHOF, M 1995, Holism and Field Theories in Biology – Non-Molecular Approaches and Their Relevance to Biophysics, in JJ CHANG, J FISCH & FA POPP (eds.), Biophotons, Kluwer, Dordrecht.

BISCHOF, M 2002, Tachyonen Orgonenergie Skalarwellen – Feinstoffliche Felder zwischen Mythos und Wissenschaft, AT, Aarau.

BISCHOF, M 2003, "Introduction to Integrative Biophysics", in FA Popp & LV Beloussov (eds.), Integrative Biophysics – Biophotonics, Kluwer Academic Publishers, Dordrecht, pp. 1–115.

BISCHOF, M 2007a, "Vernadsky's noosphere and slavophile sobornost – some early concepts of field phenomena in social life", in LV Beloussov, VL Voeikov & VS Martynyuk (eds.), Biophotonics and Coherent Systems in Biology, Springer, New York.

BISCHOF, M 2007b, "Soziale Intelligenz und zwischenmenschliche Felder", Der Freie Arzt, vol. 48, no. 4 (April 2007), pp. 8–9.

BISCHOF, M 2009, "Kultur der Verbundenheit – Feld-Vorstellungen als Basis einer positiven Kulturentwicklung", Hagia Chora, vol. 11, no. 32 (May 2009), pp. 24–27.

BISCHOF, M 2010, Salutogenese – unterwegs zur Gesundheit. Neue Gesundheitskonzepte und die Entfaltung einer Integrativen Medizin, Drachen Verlag, Klein Jasedow.

BURNS, JT 1997, Cosmic Influences on Humans, Animals, and Plants, Scarecrow Press, Lanham MD.

CHIZHEVSKY, AL 1930, Epidemic Catastrophes and the Periodic Activity of the Sun (in Russian), Moscow.

CHIZHEVSKY, AL 1968, The Earth in the Universe, ed. VV Fedynsky, NASA TT F-345 TT 66-51025.

CHIZHEVSKY, AL 1976, The Terrestrial Echo of Solar Storms, Mysl, Moscow.

CLARKE, B & HENDERSON, LD 2002, From Energy to Information: Representation in Science and Technology, Art and Literature, Stanford University Press, Stanford.

HENDERSON, LD 1988, "X Rays and the quest for invisible reality in the art of Kupka, Duchamp, and the Cubists", Art Journal, vol.47, no. 4, pp. 323–340.

HO, MW 1993, The Rainbow and the Worm – The Physics of Organisms, World Scientific, Singapore.

NOBREGA, C 2009, Art and Technology: Coherence, Connectedness, and the Integrative Field, PhD. thesis, University of Plymouth.

PETERSEN WF 1947, Man Weather Sun, Charles C. Thomas, Springfield.

PICCARDI G 1962, The Chemical Basis of Medical Climatology, Charles C. Thomas, Springfield.

SINZ R 1978, Zeitstrukturen und organismische Regulationen, Akademie Verlag, Berlin.

Pier Luigi Capucci

UNIVERSITY OF URBINO, MILAN, ITALY
THE PLANETARY COLLEGIUM, CAiiA-HUB,
PLYMOUTH, UK

plc@noemalab.org
web: http://www.noemalab.org/plc/plc.html

THE SENSIBLE REALITY BETWEEN OBVIOUSNESS AND UNCERTAINTY

REALITY AND THE SENSES

A common sense idea is that reality falls under the sensorial faculties. What we see, smell, hear, taste and touch, directly or mediated through devices which expand the senses' capabilities, is real. The sensorial system can be defined as a whole which helps in detecting what is outside the organism, and the senses should not be considered as separate entities but as subsystems working together in synergy and exchanging abilities in shaping or enacting what is called "the outside world". The senses constitute a unitary sensorial sphere with a great cohesion, and this graph is an attempt to summarize their analogies and differences [1].

Among other things this graph suggests that the sense of touch is the more general one. In fact, according to some scientists, it was the first that appeared in the organisms' evolution [2]. All the other senses evolved from the touch specializing in decoding a variety of more or less distant information, for evident evolutionary benefits: for instance expanding the organism's capabilities in detecting at distance the environment's threats and nourishment.

In our culture, the remote and mediated communication has become increasingly relevant. In order to have an idea of the extent of this process, which occurred in less than 200 years, we could compare today's many opportunities – synchronous communications like cellular and old plain telephony, IP based communications like Skype and chats, and asynchronous communications like email, forums and so on … – which can be very inexpensive, with the communications technologies that were available by the mid 19th century. Additionally it could be of some interest that this process caused a reorganization, and maybe even a decadence of the material senses. For instance the olfactory information can not be transferred – digitized and independently managed – in today's remote and mediated communication: it can only be indirectly and synaesthetically evoked through the visual and acoustic channels. Hence, we must admit that we accepted to communicate more rapidly, over greater distance, in an increasingly affordable and economic way, but in exchange for an impoverished communication. Moreover it should be noted that, despite the hegemony of the senses of distance (sight and hearing, the so called "superior" senses) in the western culture, the senses of proximity and contact (smell and touch) are considered more relevant in relation to reality. "Touching is believing" instead of "seeing is believing": like St. Thomas, who touched the wounds of Jesus to be sure he was real, we trust more in the information we get with touch. And, as a corollary, the direct interactive communication is more effective than the mediated and passive ones.

Smell pertains the body's reality and status in such a strict and powerful way that humans invented the perfumes and the deodorants in order to divert, expand or remove the body's odour and to enhance its symbolic dimension, thereby escaping that limiting and immediate condition. And, finally, smell and touch are the main senses in intimacy and love, relying both on direct and short distance, or contact communication.

TWO EXAMPLES OF SENSORY RELATED REALITY

It seems that humans like, or even need, creating and inhabiting new worlds and realities. In our culture the topic of a "fake" reality indistinguishable from the "real" reality has often been discussed. Cinema and television proposed some ideas in a popular, although interesting way. This paper considers two examples.

THE *STAR TREK* HOLODECK

Star Trek is a modern mythology invented by Gene Roddenberry, and is totally built upon the existence of new worlds. It is a fiction which lasted more than thirty five years through TV series, movies, cartoons, video games, books, magazines, comics and gadgets. Star Trek became popular not only within a mass media audience, but also among academics, scientists and scholars working in many disciplines. And among technologists, novelists and journalists, who dedicated themselves to *Star Trek* books, essays, lectures and articles. In his book *Star Trek: Technologies of Disappearance* [3], Alan Shapiro claims that the peculiarity of *Star Trek* and the reason for its success reside in the creation of a reality-shaping science fiction capable of formatively influencing culture, ideas, technologies, and even "hard sciences" like physics. *Star Trek*'s technologies, and the cultural, moral, aesthetic, and philosophical imagination that pervades them, are our own twenty-first century technologies in development [4]. To use Roland Barthes' phrase they belong to our anthropological *desiderata* (anthropological desires).

Moreover, as a nested reality, in the Enterprise, the *Star Trek* spaceship, there is the Holodeck, a sort of computer-driven *wunderkammer* which can create whatever environment wanted and make it absolutely real from a sensorial viewpoint. This world can perform situations, people and events taken from history, literature and even from one person's imagination, and share them among the participants. In these invented or re-created worlds the Enterprise crew members can make their dreams come true, can fulfil their wishes, cultivate their hobbies, relax after the ordeals, participate individually or in groups. These worlds are so plausible and well simulated that the crew members can

	Sight	Hearing	Smell	Taste	Touch
Nature of the stimulation	Immaterial	Material	Material	Material	Material Immaterial
Nature of the information	Light waves (electromagnetic)	Acoustic waves (mechanical vibrations)	Microparticles of matter	Macroparticles of matter	Macroportions of matter Electromagnetic
Sense type	Electromagnetic	Mechanical	Chemical	Chemical Mechanical Thermal	Mechanical Electromagnetic Thermal Chemical
Vector of the information	Light	Air Vibrations of the matter	Air	Movement of the matter Composition of the matter	Movement of the matter Air Electromagnetic radiations Composition of the matter
Distance (0-2)	2	1	1	0	0-1-2

FIG. 1: *For a taxonomy of the senses*

come to the point of forgetting their tasks in the spaceship, or they can injure themselves during their adventures there, and they can even fall in love with the human-like artificial intelligences that are created within these worlds (and who are aware that they are not "real"!).

There is no sensorial difference between the reality created by the Holodeck and the everyday reality. Although it may seem potentially infinite, the Holodeck reality is spatially confined behind that door, this human desire and computer-driven world is all enclosed in that space. Hence, since the senses are unable to distinguish the "real reality" from the Holodeck reality, it seems the only difference is in its topography (in its location in the Enterprise), in the fact that it can be switched on and off at will, and in the awareness of the people who enjoy it.

We have no idea of how many people from the Enterprise crew permanently abandoned the "real world", settling in some artificial dreamland inside the Holodeck. But I think they could have been many.

eXistenZ

eXistenZ is a movie directed by David Cronenberg in 1999[5]. It is deeply inspired by Philip K. Dick's work, which considers the issues of reality's perception, ambiguity and control as nodal topics. *eXistenZ* presents an indefinable future where gaming is the most compelling activity and the games have a central role in everyday life. Everybody plays games at any age, because games allow them to change their life, make people free, and are neither only audio- and visual-based, nor digital. They are far more complex and can involve all the senses with a body-driven technology, and the world the players enter and share is sensorially indistinguishable from the real world.

In *eXistenZ* reality is a cage which can be opened by the games, and is the "most pathetic outer level of reality"[6]. The reality of the games is by far superior to the "real reality" and everyone wants to live in the games, because there they cannot die, fall ill or get really hurt, they can restart their lives from scratch and play them repetitively, and they can act as heroes[7]. A player states that remaining in the game for a lifetime would mean living roughly five hundred years.

In *eXistenZ* the power of the medium is shown at its mere working level[8]. The participants choose to live in the world of the game because it is far more exciting than the "real world", which is simply a layer of reality mingled with the layers of simulation. They want to live inside the game regardless of the game's contents and goals to achieve: in fact in *eXistenZ* there is no clear goal to achieve: the real goal is simply to play, in order to live inside the game's reality. In these equivalent realities which are intertwined, the "real world" is only one of the possible worlds, a residual scenario among plenty of scenarios.

In *eXistenZ*, like in the *Star Trek*'s Holodeck, the "real reality" is indistinguishable from, and confused with, the reality built by the device. In the end, there is no proof, and maybe even no necessity, of its existence. Neither the content nor the body or the senses are useful for discerning and recognizing among realities. What is considered as the "real reality" is topologically external to the reality performed by the device: people know or believe that they are in the

eXistenZ's or in the Holodeck's realities only because in the former they deliberately connect to the organic interface – the Pod, which is wired to and powered by the body – and in the latter they deliberately cross the Holodeck's door. And, of course, the realities built by the devices can be switched on and off.

Since the difference between realities sensorially vanishes, it cannot be based on the content but on something external: so everything shifts to moral, philosophical, social, political, juridical or simply topological and conventional issues (I/we agree that reality is this!). Just like in the digital information, where there is no difference between the original and the copy – as well as among the copies themselves – they can only be externally (contextually) separated: conventionally, by means of the date of creation (the "original" was created *before* the "copy") and/or administratively or juridically, for example through some kind of "security label" sticked onto the packaging.

BEYOND THE SENSES

Anyway founding reality only on the senses is simplistic. The senses can be tricked and altered, reality seems more complex, elusive, illusory. We know this topic pretty well because the sensorial deception is at the basis of all media, both from a mere technological viewpoint, for instance in the frame per seconds rate in cinema and video, which gives the idea of movement, and more evidently in the techniques for simulating the perception of reality : the Renaissance perspective, photography, cinema and video, acoustic recording and diffusion, 3D computer simulations, Virtual Reality, holography. The media work creeping into the biological and cultural constraints of the human perception and cognition.

Indeed, an increasing part of reality is acquired and built through the media; knowledge and awareness are more and more media based. There are entities that we see as real, which influence our actions and lives, despite the fact that we never get directly in touch with them. For instance, we think actors and politicians exist because they actually decline our fun and work with shows and laws (that sometimes tend to merge), but we only meet them in the media.

Moreover, there are entities we cannot detect with the senses, neither directly nor in a mediated way through any device, but we know that they supposedly exist and they heavily influence the universe we live in: for instance the dark matter and the dark energy. And finally there are entities which only exist in our minds. We call them dreams, thoughts, ideas, impressions, projects, memories, expectations, or they are more complex like awareness and consciousness. Despite the fact that they can't be detected by the senses they are real because they can affect and define our lives and actions deeply. We put them at the top of our lives, and we tend to live increasingly within these worlds and dimensions.

So reality escapes …

ACKNOWLEDGEMENTS

Many thanks to Katina Hazelden for the help in the final release of the paper

NOTES

1) I made this graph by the middle of the '90s and I showed it to my students while discussing the sensory issues in communication. I consider it as a work in progress and it could be expanded to include other sensorial functions and faculties.
2) Gregory, R.,1989. *Curiose percezioni*. Bologna: il Mulino.
3) Shapiro, A.N., 2004. *Star Trek: Technologies of Disappearance*. Berlin: Avinus.
4) See my review of Shapiro's book published online in *Noema*: http://is.gd/dg7DC.
5) *eXistenZ*, 1999. [Film] Directed by David Cronenberg. Canada/UK: Alliance Atlantis Communications.
6) It is the sentence that Gas, the gas station clerk in the movie, says when he meets Allegra Geller, the maker of the game.
7) See in particular the survey Castronova, E., 2001. *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier*. [Online] Social Science Research Network. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=294828 [Accessed 13 June 2010]. Essay also published in *Noema*, http://www.noemalab.org/sections/ideas/ideas_articles/castronova_virtual_worlds.html [Accessed 20 June 2010]. Also Castronova, E., 2005. *Synthetic Worlds. The Business and Culture of Online Games*. Chicago: The University of Chicago Press.
8) This is clearly a mcluhanian approach, and takes the topic of *Videodrome*, a former Cronenberg's movie (1983) to new heights. Cronenberg is Canadian, like McLuhan.
9) I have been working on this topic for many years. The most recent paper: Capucci, p. L., 2010. *Simulation as a Global Resource*. [Online] Noema. Available at http://www.noemalab.org/sections/ideas/ideas_articles/capucci_simulation_global_resource.html [Accessed 20 June 2010].

Claudia Cardoso-Fleck

PHD CANDIDATE & RESEARCHER AT PLANETARY COLLEGIUM – CAiiA HUB, UNIVERSITY OF PLYMOUTH, UK
cj@claudiajacques.org
http://www.claudiajacques.org

CYBERPERCEPTION, TECHNOETIC AESTHETICS & CONSCIOUSNESS IN "MIXING REALITIES": *Theory into Practice*

Examining technological change in an earlier era of human history, Wolfgang Schivelbusch (1987) describes how the advent of the railroad changed the way humans perceive time and space.

> *"'Annihilation of time and space' was the* ***topos*** *which the early nineteenth century used to describe the new situation into which the railroad placed natural space after depriving it of its hitherto absolute powers. Motion was no longer dependent on the conditions of natural space, but on mechanical power that created its own new spatiality." (Schivelbusch 1987, p. 10)*

Schivelbusch's theory is based on what was then the radically new experience of connecting two cities through a train ride. As people began to travel from one point to another at much higher speeds than by earlier means of transportation, the time they spent traveling diminished qualitatively. And as more areas were incorporated along the track line, people also had qualitatively expanded access to towns and cities previously inaccessible. The impact on human consciousness was that, through the expansion of access, "Space [was] killed by the railways," (Schivelbusch 1987, p. 37) leaving only time. Traveling had become little more than a subjective experience, reduced to the perception of the time spent between departure and arrival. This contradiction between expanding access to new spaces and diminishing/destroying the time spent between two points transformed perceptions of the time-space continuum.

Examining recent technological innovation, Paul Virilio (1995) suggests that we may be experiencing a new annihilation: the destruction of human interaction. He argues that the advent of the cyber world is distracting our perceptions and alienating us from one another. Virilio believes that because of new technological tools authentic perception is lost, leaving only "a fundamental disorientation," (Virilio 1995) a physical state of numbness, as human interaction ceases to occur, even with ourselves. Virilio's rationale is that easy access to electronic devices and technological tools from cell phones to virtual reality interfaces may be amplifying our interaction with the various mediums, but diminishing our interactions with ourselves and others. Means of electronic communication are getting faster and cheaper, allowing us to isolate ourselves from reality. Instead of being in the here and now, we are each in our own isolated world, with our phones, headphones, computers, and e-books, attempting to relate to something, but not necessarily to ourselves or anybody in particular. This phenomenon represents an expansion of technological interaction but an annihilation of human interaction.

As early as 1994, Roy Ascott observed that the world was already mediated by computers and that this is the stark reality we must confront. In an article entitled "The Architecture of Cyberperception," (Ascott 1994 cited in Shanken 2003, p. 319) he described how human perception was being transformed by the advent of information technologies and the Internet, especially the influence of cybernetics feedback processes. Ordinary perception, "[...] the awareness of the elements of the environment through physical sensation, [was becoming] computer-mediated and computer enhanced." (Ascott 1994 cited in Shanken 2003, p. 320) Ascott's concept of cyberperception may have seemed futuristic and utopian in 1994, but in 2010 it is commonly accepted that our perception of reality is indeed thoroughly integrated with the computer world, totally mediated by computer and information technologies.

The question artists must confront is how best to effect a balance between mind and matter, how to call attention to the enormous positive potential in the use of technological tools to generate and enhance human interaction. In other words, how can artists facilitate positive cyberperception? Ascott (2000) refers to "technoetics – the transformation of consciousness through technology." He suggests that the concern of classical aesthetics with the surface image of the world should give way to a technoetic aesthetics of creative consciousness and artificial life. (Ascott 1996 cited in Shanken 2003, p. 381)

It may be in technoetic aesthetics that we artists can find skillful means to resist the annihilation of human interaction by cyberperception. The technoetic artist should be aware of the potential of cybernetic communication and feedback processes to create positive cyberperception.

> *"Cybernetics is the science that studies the abstract principles of organization in complex systems […]. Second-order cybernetics in particular studies the role of the (human) observer in the construction of models of systems and other observers." (Heylighen 2001, p. 2)*

Within the framework of second-order cybernetics, the artist, artwork and user interaction generate processes instead of products (Ascott 1967 cited in Shanken 2003, p. 157). Emphasis on the process itself allows artist, artwork and user to develop a behavioral dialogue. The artwork outcome is influenced by the user's physical, emotional and conceptual experiences and the user feedbacks

FIG. 1

FIG. 2

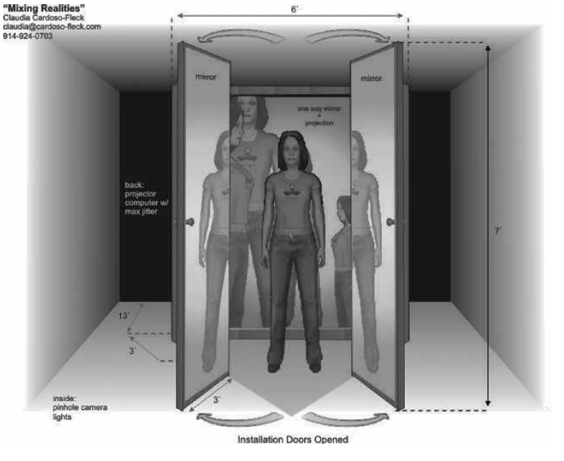


FIG. 3

create a fluid interactive system. This interactive system has the potential to generate double-consciousness:

> *"The state of being that gives access, at one and the same time, to two distinctly different fields of experience: psychic space and cyberspace, the material world and the virtual, in an artwork and outside of it." (Ascott 1996 cited in Shanken 2003, p. 377)*

Cybermediations allow artists to navigate consciousness by creating new structures, images and experiences.

One of the first major artists to conceptualize interactivity as a key element in his work was Marcel Duchamp. In his speech "Creative Act" (1957), Duchamp explored the idea of the artist being a medium for the art: "The creative act is not performed by the artist alone; the spectator brings the

work in contact with the external world by deciphering and interpreting its inner qualification and thus adds his contribution to the creative act." (Duchamp 1957) Duchamp's attempt to interact with the viewer opened doors to today's cyberperception. Before Duchamp's "ready-made" and machine-powered objects of art, art was not generally viewed as a "medium." Art was to be admired from a distance, preferably glorified in a selective institution. The viewer was supposed to be a quiet, passive spectator. Duchamp dared with his artwork to reach out to the audience. Duchamp's bold experiment in interactivity is best understood in its historical context.

The machine age and modernism were emerging together in the late nineteenth and early twentieth century. In 1839, the Daguerreotype photographic process was used successfully for the first time. This new mechanical "gadget" led to a series of inventions that changed the way artists saw the world. Photography and the moving image became the new media of the time, and as such, as Lovejoy states (2004), were embraced by some and rejected by others. The new media changed the way many artists dealt with art and how it was used to reproduce reality. Artists felt unconstrained by the responsibility of reproducing reality, opening the door to modernism. It was that newfound freedom, the full use of machines as medium, and a short lived "non-movement" in response to world war that formed Duchamp's background.

Dada (Delahunt 2008) was an international avant-garde art movement that emerged in response to traditional painting-based art movements as a non-art movement from 1916 to 1920. Its intention was to satirize society and its cultural, political, social and artistic choices. World War I, where machines were used for the first time in war and humanity experienced firsthand the devastating consequences of this lethal combination, formed the backdrop and impetus for this "non-movement."

In his artwork Duchamp was always playing with the meaning of words. If stated in terms of Charles Pierce's semiotic theory (Peirce 2001 cited in Burch 2008), Duchamp's witty and playful artwork used the index (word or brute fact) and changed its symbol (meaning) in order to change its icon (association). This was his way of enhancing perception through a medium as means of communicating with the audience and interacting through his artwork. Examples are his work titles [1]: "L.H.O.O.Q." (1919), "Tu M'" (1918), "Trébuchet" (1917), "Fountain" signed by "R. Mutt" (1917), to name a few. By questioning what the "something" really was and what it meant to him and the viewer he started a dialogue and developed a relationship between viewer and artist through the medium.

Roy Ascott introduced the idea that the purpose of the artist and the art-object is to connect with the user, creating a communication between the artwork, the artist and the user. (Ascott 2002, pp. 17–18) Ascott's concepts expanded Duchamp's vision of art and interactivity creating a conceptual context for the interactive installation "Mixing Realities." The ultimate artwork is a combination of the artist herself, the medium or artwork created, and the user who connects to it. Cyberperception, focusing on technoetic aesthetics to develop consciousness, connects these three elements: artist/medium/user. Interactivity is an active component in "Mixing Realities." It is what allows the artist to mix her own reality with the user's, as well as the user's reality with the reality that is being projected, which generates a third reality: the final artwork. The installation structure was designed to be enclosed in order to facilitate a cyberperception of the mixed realities.

FIGURE 1
USER INSIDE "MIXING REALITIES"
The installation is an attempt to create and enhance self-awareness and ultimately double-consciousness by combining physical and virtual, present and past through interactive feedback processes. The physical installation itself is a triangular room. Influenced by cyberperception and Marcel Duchamp, the artist chose wood, an organic and soft material not usually associated with technology for the structure. As the goal of the installation is to connect people with themselves and the world, having a "natural" looking room diminishes the expectations of an experience similar to video games or virtual reality and enhances unconscious awareness of the self and its relation to physical reality.

FIGURE 2
"MIXING REALITIES" WOOD STRUCTURE
In the first stage of the installation, interaction allows the person to just look at her/himself in the mirrors. The mirrors create a kaleidoscopic effect with different views and levels that can be engaging, intriguing, or even intimidating for some users. The idea is to invite the user to experience looking at the self in the mirror and engage in a casual, not forced way, allowing users to simply see their reflections in the mirror. This is based on Duchamp's concept of the artist as a medium for the art.

Once the user is fully engaged with the mirrors and intrigued by his/her own self, he/she usually starts to move and interact with him/herself. That is when he/she can interact with time (past) as his/her image is projected back onto the installation with a few seconds time-delay. Her/his movements are reflected by the mirrors as well as projected back with a brief delay. Movements are thus perceived as echoes, and the more a person moves the more echoes she/he creates. The third stage is the introduction of a longer delay – 3 minutes – which can synthesize and project back images of strangers who passed by the installation earlier with images of the person who is currently in it.

FIGURE 3
"MIXING REALITIES" SKETCH TOP VIEW
Cyberperception within the framework of virtual reality, "Mixing Realities" is best characterized as an Augmented Reality based on the exploration of motion, interaction, viewpoint and emotional emersion. Emotional emersion allows engagement with the artwork.

The advent of the computer can help improve cyberperception as it gives artists the feedback tools to develop technoetic art work. Exploring artworks with user's interaction, artists can create awareness of the self and enhance the mind-matter relationship.

NOTES

1) Refers to Marcel Duchamp's usage of word games to title his work. "L.H.O.O.Q" – *Elle a chaud au cul*, what he intended to mean, "She has hot ass"; "Tu M" – "I love you"; "Trebuchet" etc.

REFERENCES

ASCOTT, Roy. (1966) Behaviourist Art and the Cybernetic Vision. Cybernetica, Journal of the International Association for Cybernetics. Namur, vol. 9

ASCOTT, Roy (2002) "Interactive Art." Interactive Learning in Museums of Art and Design.
Available at: http://www.vam.ac.uk/files/file_upload/5766_file.pdf

ASCOTT, R & SHANKEN, E (2003) Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness. University of California Press.

BURCH, Robert (2008) "Charles Sanders Peirce: 10. Mind and Semeiotic." (2001) Stanford Encyclopedia of Philosophy. Stanford University.
Available at: http://plato.stanford.edu/entries/peirce/#mind

DELAHUNT, Michael (2008) Dada. Artlex - Art Dictionary.
Available at: http://www.artlex.com/ArtLex/d/dada.html

HEYLIGHEN, F. & JOSLYN, Cliff (2001) Cybernetics and Second-Order Cybernetics. Encyclopedia of Physical Science & Technology, Academic Press. Available at:
http://pespmc1.vub.ac.be/papers/Cybernetics-EPST.pdf

LOVEJOY, Margot (2004) Machine Age and Modernism. Digital Currents: Art in the Electronic Age. Routledge.

SCHIVELBUSCH , Wolfgang (1987) The Railway Journey: The Industrialization and Perception of Time and Space. University of California Press.

VAN KOKSWIJK, Jacob (2007) Behaviourism. Jacob van Kokswijk. Available at: http://www.kokswijk.nl/behaviorism.htm

Alexander Ćetković

RESEARCH FELLOW AT THE PLANETARY COLLEGIUM (CAiiA) UNIVERSITY OF PLYMOUTH, UK
acetkovic@acm.org

USE OF TECHNOLOGY TO CREATE A VIEW: *An Analysis of Le Corbusier's Penthouse Charles de Beistegui and Diller+Scofidios "Slow House"*

"Why is architecture a technology that creates a view? Because it mediates it with a window frame.'' Elizabeth Diller (Lubow 2003)

APARTMENT CHARLES DE BEISTEGUI BY LE CORBUSIER (CONSTRUCTED 1929–31) IN PARIS

The apartment of Charles de Beistegui, which no longer exists, was situated on the Champs-Élysées, one of the most thriving and attractive areas of Paris. It was commissioned by count Charles de Beistegui, an eccentric multi-millionaire art collector. The apartment was intended mainly for parties to which the count invited many artists and celebrities of the time.

What strikes one looking at the pictures of the apartment is the total lack of views to the vicinity from the terrace, negating the favoured location. It had also in many other ways a special setting. The prevailing style was more surrealistic, as Beistegui, renowned for his interior design, used elements such as Venetian glass and Napoleon III embellishments. The pictures of the apartment do not at all remind one of the modernist idol Le Corbusier. Nevertheless, Le Corbusier did integrate many of his ideas, although they are not obvious at first sight. A significant motivation for Le Corbusier was the technology involved in the project. Although only lit by candle-light (the only "living light", according to Beistegui [1]), the apartment had about four kilometres of electrical cables installed for special effects used to impress guests. There were moving walls, chandeliers that would lift to reveal a cinema projection room, and doors that would open automatically, invisible like the "docile servant". However, many of the interventions were included to emphasize something that at first sight was architecturally obscured: the view. The rooftop terrace, organized on four levels, was on the entry level bounded by a high hedge, leading to a high platform outlined only with walls, a fireplace on one side, and a grass floor, creating "la chambre à ciel ouvert". In images, one sees tips of the Arc de Triomphe, Sacré Coeur, Notre Dame, and the Eiffel Tower, the four icons of Paris (*lieux sacrés de Paris* – Le Corbusier) peeking over the edge of the walls. These four precise places Le Corbusier described as "moving views" ("perspectives émouventables"[2]), in place of the suppressed panoramic view of Paris. The vistas reproduce the "reality" of Paris as depicted by contemporary postcards [3].

On the lower levels, the press of a button moved parts of the hedges electrically, revealing Notre Dame and its surroundings. Of the inside spaces, the salon has two picture windows (one facing Eiffel Tower, the other Notre-Dame); half of the window towards Eiffel Tower moves electrically, opening the view on the big terrace where the Arc de Triomphe appears, and with trimmed trees used as a framing device.

In 1928, three years before the apartment was accomplished, Valéry wrote:

> *"Works of art will acquire a kind of ubiquity [...] They will not merely exist in themselves but will exist wherever someone with a certain apparatus happens to be [...] Just as water, gas and electricity are brought into our houses from far off to satisfy our needs in response to a minimal effort, so we shall be supplied with visual and auditory images, which will appear and disappear at the simple movement of the hand, hardly more than a sign [...] I don't know if a philosopher has ever dreamed of a company engaged in the home delivery of Sensory Reality."*

The only way to fully enjoy the metropolitan spectacle was by watching the projection in a "camera obscura" of a periscope on the rooftop.

> *"The distance interposed between the penthouse and the Parisian panorama is secured by a technological device, the periscope. An 'innocent' reunification between the fragment and the whole is no longer possible; the intervention of the artifice is a necessity" (Tafuri n.d.) (Brooks, 1987)*

> *"But if this periscope, this primitive form of prosthesis, this 'artificial limb,' is* ***necessary*** *in the Beistegui apartment, it is only because the apartment is* ***still*** *located in a nineteenth-century city: it is a penthouse in the Champs-Elysées. In 'ideal' urban conditions, the house itself becomes the artifice." (Colomina, 1980)*

The view was presented on a table in the darkened room, projected through an optical prosthesis, a forerunner of the digital surveillance-camera. Unlike the classical "camera obscura", that displayed the objects mirrored and upside-down, the periscope presents the projection in proper orientation. The setting of the periscope allowed a 360° view of the environment. The motif of the periscope, the rooftops and landscape of Paris, was more or less fixed. On the other hand, the observer was obliged to move around

the table, following the periscope if he wanted to see the projection properly – thereby reversing, in a certain sense, the roles in the cinema, where the spectator is fixed and the images mobile. The dark room had the same effect on the spectator as in cinema, bringing him closer to the picture.

"The power of artificial light to create its own reality only reveals itself in darkness. […] The spectator in the dark is alone with himself and the illuminated image because social connections cease to exist in the dark. Darkness heightens individual perceptions, magnifying them many times. The darkened auditorium gives the illuminated image an intensity that it would not otherwise possess. Every lighted image is experienced as the light at the end of the tunnel – the visual tunnel, in this case – and as a liberation from the dark." (Schivelbusch, 1995)

"THE SLOW HOUSE" DESIGNED BY DILLER+ SCOFIDIO, HAMPTONS, LONG ISLAND, 1991

In 1991 the architects Diller+Scofidio were commissioned to design a weekend retreat for a Japanese art investor. "Our client came to us and said he wanted a house with a view". That request made them analyse the term "view" – for instance, the evolution of the picture window and the terminology in real estate ads – proposing a design that didn't resemble the typical weekend house. Knowing that the client would arrive by car, for them the intervention begins at the moment of the departure from the city, the windshield of the car framing the commute. When the car stops at the end of the road, the approach continues by foot to the front door of the house. Actually, the front door is the front façade, four feet wide and eight feet high. Immediately behind the entrance, the passage is divided in two: one way ascending and leading to the kitchen, dining, and living areas; the second remains level and leads to the bedrooms and bathrooms. Either choice of the divided passage leads to a picture window and the view. The shape of the house, bent like a banana, at first prevents seeing the window in the back. When the picture window is finally reached, the view is partly obstructed by a video monitor, displaying the same vista. A tall stack holds a window camera forty feet above the ground, capturing the water view. It transmits the live image to the TV monitor in front of the picture window – in front of the "real" view. The camera can pan, zoom, and record. If the view is recorded, it can be replayed showing day when it is night, or displaying fair weather when it is foul outside. The view can be played fast-forward or in slow-motion, and can be frozen in slow-motion. It can even be transported to another location.

"In the slow house, the tele-visual view to the horizon is seen concurrently with, and compressed against, the view framed by the picture window. The TV screen electronically reconstitutes the portion of the image that it blocks. The 'view' is thus grafted together in two representational models, though the horizon lines are out of register. Despite the leisure posture, the body sunk into the recliner with remote control in the hand, only one thing eludes the control of the passive viewer: the horizon can never be realigned. Thus, the vacant leisure gaze is arrested at the window's surface and forced to contemplate the instrument of its contemplation."

"The Slow House is a vacation home – a second home, and as such, it exploits the freedoms of the surrogate. Taking issue with the construction of visual pleasure for the leisure eye – both its production and its denial – the house regulates three optical devices of 'escape' from and to culture: the ***car windshield****, a reversible escape in the vehicular space between city and vacation home; the television screen, a solitary escape into mediatic space, a social space that connects viewers with an electronic weld;* ***the picture window****, the escape into a proprietary scenic space, a space measured by market value."(Diller & Scofidio, 1996)*

The house itself was never built. Soon after the foundation was dug, the art market crashed, and the financially stricken client withdrew the commission.

COMPARISON OF THE TWO HOUSES

The house as technology to create a view

Both Le Corbusier and Diller+Scofidio see architecture as a technology to create a view.

In a series of drawings around Rio de Janeiro that represent the relation between domestic space and spectacle, Le Corbusier shows his relationship to the view:

"The house is installed in front of the site, not in the site. The house is a frame for a view. The window is a gigantic screen. But then the view enters the house, it is literally 'inscribed' in the lease: 'The pact with nature has been sealed! By means available to town planning it is possible to enter nature in the lease. Rio de Janeiro is a celebrated site. But Algiers, Marseilles, Oran, Nice and all the Côte d'Azur, Barcelona, and many maritime and inland town can boast of admirable landscapes.'" (Le Corbusier[4])

But as Colomina put it, Le Corbusier doesn't mean that architecture is independent of place. It is the concept of place that has changed. "We are talking here about a site that is defined by sight."

Viewing a landscape through a window implies a separation. A "window, breaks the connection between being in a landscape and seeing it. Landscape becomes [purely] visual, and we depend on memory to know it as tangible experience."(Rosalind Krauss)[5]

In de Beistegui's apartment the technology imposes even more – electricity is used as a technology of framing: doors, walls, hedges – traditional architectural framing devices – are activated with electric power, as is the cinema projector[6]. The views from the inside and outside spaces are technologically controlled.

And for Diller+Scofidio the picture window constructs nature and domesticates it, it commodifies the view and turns it into an artifact:

"If the picture window turns any view into a representation, collapsing the depth onto the surface of glass, the framed ocean view in the Slow House is no less 'mediated' than the 'technologized' view on its TV screen. The terms of mediation are thus put into question, as are the designations 'high' and 'low' in relation to technology. As advanced technology strives to dematerialize its hardware, leaving only

its effects, is not the picture window, in fact, a more advanced technology than the television set, in that its socially and economically driven mechanisms are virtually invisible, leaving only a simple frame?" (Diller & Scofidio, 1996)

THE MOVEMENT AS OPPOSED TO THE FIXED OBSERVER OF THE PERSPECTIVE VIEW

In both projects movement has a major role in experiencing the architecture. As in other projects (Villa Savoye, Villa Stein, Villa Roche), Le Corbusier creates a promenade architectural, which has often been compared to mise-en-scene of films. Eisenstein in his essay "Montage and Architecture" (Eisenstein, 1938) compares the setting in architecture to the montage in film where, as Friedberg [7] explains, Eisenstein was drawn to the paradoxical relation between the mobility of the architectural spectator and immobility of the cinematic viewer. It is important to note that in both projects the Albertian perspective view with the fixed spectator is negated though the setting that conveys movement. Of course it is not only staged for the view, but to create a tension, an arousing by the movement in building.

THE VIRTUAL AND THE REAL

In both projects the 3D landscape is reduced to a 2D view. Furthermore, the view is compared with the virtual presentation on the TV-screen or the projection of the periscope where the vertical facades and the sky are displayed horizontally. Also in the Slow House there is this aspect of "multiple" screens, like windows in the computer, where several presentations are viewed at the same time, corresponding to the broader consciousness of our time. The reality is projected in the virtual, or more precisely it becomes a mediated reality.

CONCLUSION

With the two houses, the apartment de Beistegui from Le Corbusier, and Diller+Scofidios' "Slow House", I was interested in the relation of technology to architecture and the possible role of technology to help interpret, analyse, or redefine certain aspects of architecture. The two houses are not typical architecture. Moreover, they are, each one for itself, special in the typology of architecture they represent, the fun house and the vacation house, both planned not for general, but only for specific tasks. Both of them are, more or less, designed around the theme of the view. What makes them special, in my eyes, from other projects of this kind, is the integration of technology to reflect on the theme of the view. Indeed none of the projects would be the same in their meaning if they were stripped away of the technology. The technology is used as a prosthesis to achieve certain effects, and at the same time to bring deeper insight.

NOTES

1) pp. 297 Colomina 1980
2) pp. 303 Colomina 1980
3) pp. 318 Colomina 1980
4) pp. 319–323 Colomina 1980
5) pp. 133 Colomina 1980
6) pp. 301 Colomina 1980
7) pp. 172–172 (Friedberg 2006)

BIBLIOGRAPHY

BREMNER, A., 2000. RE-ACTIVATING – THE – DOCILE – BODY: A Critical (Re)View of Diller and Scofidio's Slow House. Architectural Theory Review, 5(1), 104.

COLOMINA, B., 1980. Privacy and Publicity: Modern Architecture As Mass Media, MIT Press.

DILLER, E. & SCOFIDIO, R., 1996. Flesh: Architectural Probes 1st ed., Princeton Architectural Press.

EISENSTEIN, S., 1938. Montage and Architecture. Assemblage 10, (December 1989), 111–131.

FRIEDBERG, A., 2006. The Virtual Window: From Alberti to Microsoft, The MIT Press.

LUBOW, A., 2003. Architects, in Theory. The New York Times. Available at: http://www.nytimes.com/2003/02/16/magazine/architects-in-theory.html?scp=10&sq=&st=nyt&pagewanted=1 [Accessed June 27, 2010].

SCHIVELBUSCH, W., 1995. Disenchanted Night: The Industrialization of Light in the Nineteenth Century, University of California Press.

TAFURI, M., Machine et mémoire. In LE CORBUSIER. Essays by: Rayner Banham, Tim Benton, H. Allen Brooks, Alan Colquhoun, Charles Correa, Norma Evenson, Kenneth Frampton, Danièle Pauly, Vincent Scully, Peter Serenyi, Jerzy Soltan, Manfredo Tafuri, Stanislaus von Moos, André Wogenscky, Iannis Xenakis., Princeton University Press. 1987.

VALÉRY, P. , 1964. The Conquest of Ubiquity. In Aesthetics. New York: Pantheon Books, first published as "La Conquete de l'ubiquite," in De La Musique avant toute chose (Editions du Tambourinaire), 1928.

Jacques Chueke

PHD STUDENT i-DAT: INSTITUTE OF DIGITAL ART & TECHNOLOGY, UNIVERSITY OF PLYMOUTH, UK
jchueke@gmail.com

BEYOND DIGITAL INTERFACES: THE EVOLUTION OF GUI TOWARDS NATURAL USER INTERFACES

1. INTRODUCTION

Many projects are being developed with the intent of bringing to people features that allow a more direct and natural manipulation of digital interfaces and devices, such as Microsoft's Surface Computer & Ms Wall, Project Natal, Jeff Han projects from Interactive Pixel, Pranav Mistry from SixthSense, Nintendo Wii and X-Box 360 Consoles, MacBook Touch, Apple iPhone and iPad, Optimus Tactus keyboard, etc. It is possible to observe a shift in how people cope with digital devices – that could be a dialectic result from the evolution of technology itself and a natural interest from the public on more intuitive interfaces.

As Dourish suggests (2004: 27), "interaction with screen and keyboard, tends to demand our direct attention; we have to look at the screen to see what we're doing, which involves looking away from whatever other elements are in our environment, including other people. The computer sits by the desk and ties us to the desk, too." *Physical computing*[1] *aims to make user-machine interaction more organic, i.e. integrating computer technology with natural actions and behaviours from a user*, regardless of his/her characteristics, limitations, intelligence or culture. For instance, assistive technology for disabled people is a substantial field of research bringing impressive results, allowing people with special needs not to be excluded from interfacing with digital technology.

2. ABOUT GUI: DESKTOP METAPHOR

Let's start an analysis about different features of digital interfaces. My interest in doing so is to better understand how some important aspects of the user experience were consolidated and how that experience is changing with the evolution of technology itself. It's been a long journey since CLI (Command-Line Interface) with DOS, short for "Disk Operating System" dominated the IBM PC compatible market between 1981 and 1995 – which had no graphic interface at all, just text input as command, mastered only by experts with programming skills and developers. The characteristics that forged the interface of personal computers, as we know it, defined the way we understand and experience this media. There are constraints as a heritage and we will need time to embrace a shift in new ways to interact with digital interfaces; which reminds me of a quote from Buxton, from 2001: "In the early 1980s Xerox launched Star, the first commercial system with a Graphical User Interface (GUI) and the first to use the 'desktop' metaphor to organize a user's interactions with the computer. Despite the perception of huge progress, from the perspective of *design and usage models, there has been precious little progress in the intervening years.* In the tradition of Rip van Winkle, a Macintosh user from 1984 who just awoke from a 17-year sleep would have no more trouble operating a 'modern' PC than operating a modern car."

(FIG. 1–2)

I must be clear from the very beginning: I'm not criticizing the regular Graphic User Interface that defines our desktop operational systems – my interest is to scrutinize it, describe its qualities and limitations and observe trends of evolution of the interface itself. Things are as they are because of context and the conditions of the moment when they were created, as I see it. The tool affects the object created, particularly – as the wedge defined the Babylonian written in 2000 BC, the technology and the limitations of developing systems during the 80s affected how things were defined and represented. As McLuhan (1964) would say: "the media is the message" – perhaps we could translate this in regard to the proposed subject, as "the technology is the experience". At that moment in time the paradigms that drive our understanding and fruition of digital interfaces were created: the WIMP (Window, Icon, Menu, Pointing device), coined by Merzouga Wilberts in 1980 and GOMS (Goals, Operators, Methods, and Selection rules) developed in 1983 by Stuart Card, Thomas P. Moran and Allen Newell. That was the time of Human Centered Design: *the tool dictating the activities*. At the time, Shneiderman, (1983) called the desktop metaphor "Direct Manipulation[2]" which is closely associated with interfaces that use windows, icons, menus, and a pointing device (WIMP GUI) as these almost always incorporate direct manipulation to at least some degree. The notion of "affordance" brought by Gibson in 1977 and appropriated by Norman in 1988 within the context of HCI, explained that desktop interfaces from personal computers were all about "*action possibilities*".

In order to diminish the discrepancy between the different understandings that both developers and users have of an interface project, and with the intention of keeping *control* of the outcomes during the performing of a task through a system, software performance testing routines were created. These routines were divided in methodologies like Plans, Procedures, Tasks and Goals – detailed and idealized descriptions (not based on the real use) of every step of a task towards success or error (and trying to encompass all variants from the main path, although this was proven almost impossible). "Skill" in these computational

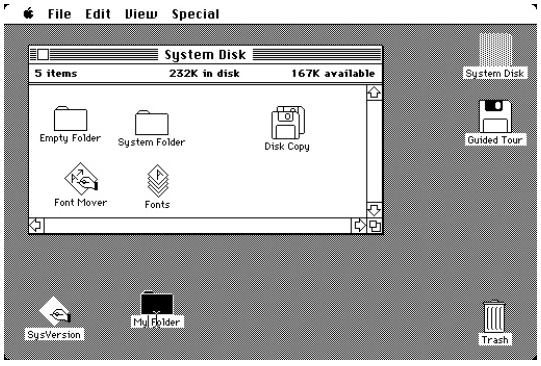


FIG. 1: *Mac OS, 1984*

FIG. 2: *Mac OSX, 2009. Have things changed that much since 1984?*

FIG. 3: *Personal computing has 3–5 small tasks in order to access a larger application to perform a major task – there are more objects of interest than meets the eye. It is tricky to remember where the final step is contained*

FIG. 4: *From Pranav Mistry's sixthsense website: http://www.pranavmistry.com/projects/sixthsense/#PICTURES*

modes presented itself like *remembering a recipe* in order to use an application for a desired outcome. As a result, problems emerged in regard to indexing steps: perhaps, what to the designer/developer of the software makes sense as "logic" flow, does not necessarily make sense for the beholder, actor, the user. For instance, why is it that every time I want to alphabetically organize my bibliography using the software "Word" (Mac OS) I have to Google the words "alphabetic word mac" to find out it is within "Table > Sort"? As Sorensen (2009), correctly states: *GUI models are performatory by nature, rather than exploratory* based upon the senses they use – the user must adapt to the working environment of the tool in order for it to function. *Its rules are separate from the physical world.*" **(FIG. 3)**

3. A DIFFERENT APPROACH: NUI

The Natural user interface [3], or NUI, is the next evolutionary phase following the shift from the command-line interface (CLI) to the graphical user interface (GUI). A NUI relies on a user being able to carry out relatively *natural motions, movements or gestures that they quickly discover* in order to control the computer application or manipulate the on-screen content. The most descriptive identifier of a NUI is the lack of a physical keyboard and/or mouse.

This paper suggests that a different approach of user-machine interface shall emerge and reach for the main industries that produce and develop computers. The paradigm that still drives our interaction with most operational systems is "*focus*". Only one window, button, link has the focus at any given moment and the cursor is exactly at one place; defining where the user action will be carried out. *One must consider that there must be no single point of control, but several different tools at disposal, which will bring a different experience regarding interfacing with computers:* there are many other possibilities for input if our hands and eyes weren't tied to a single action or focus of attention – we've two hands and ten fingers that could be manipulating different controls, or informing through cameras different sets of action, like flipping pages on a digital document, maximizing/minimizing windows, opening softwares – all by gesture recognition. We have voice, touch and eye gazing as possibilities for interaction as well.

(FIG. 4)

As I understand, *the first step* to reach this easier interaction is the use of natural interfaces, the most primitive ways of expression we have to interact with another human being, which is the use of speech, gestures, touching, presence in the environment or eye movements, thus leaving the keyboard and mouse with lesser use.

The second step would be to generate a context-aware system: this technology brings the possibility that devices could capture the context automatically. The simple presence of a person into space or any kind of body movement, arms, fingers, head, eyes and even facial expressions will be "interpreted" as input – and the system should

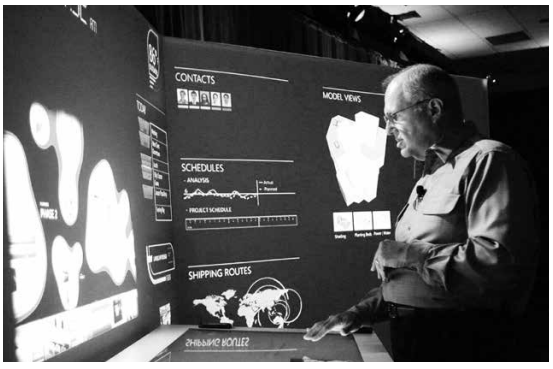


FIG. 5: *Craig Mundie, chief research & strategy officer, demonstrates natural user interface technologies at the Financial Analyst Meeting. Redmond, Wash., July 30, 2009*
http://www.microsoft.com/presspass/events/fam/images/Mundie_FAM09_print.jpg

be "intelligent" enough to know what represents action/command and what doesn't. Motion detection and computer vision studies within arts & design fields, for instance, are generating participatory experiences with people on streets, exhibitions, museums, installations, public spaces, etc. Picard (1998) stresses the importance of "Affective Computing" as the computer being able to grasp sentic modulation (voice inflection, facial expression and posture) and physiological signals from an individual.

The third step is creating a new intelligence or literacy regarding people's understanding of embodied [4] experience. Although simple and replicating natural behaviours it needs a new learning as any other emerging technology. Hopefully a small learning curve; or else it will be going against its own premises.

Consider the following scenario: a person sits in front of his/her computer. He/she decides to draw a gesture on the air that represents an "at" – thus opening an email client software. There are other tasks to be performed in the house, like cleaning the apartment and washing the dishes. While this person carries on with those tasks, he/she dictates the destination, subject and the message. Consider that the phone rings and it's an important call – no more space for voice command. Hands are dirty, and the final step would be to send the message, so with a simple eye gaze dwelling on the "send" button, the procedure is accomplished with success.

3.1. ABOUT TUI: EMBODIMENT

Within NUI we can detach the research field of TUI or Tangible User Interfaces [5], which belongs to the ACD model, or Activity-Centred Design. According to Norman (2005): "To the Human-Centred Design community, the tool should be invisible, it should not get in the way. *With Activity-Centred Design, the tool is the way.*"

When models are divorced from the physical, the feedback is not instantaneously felt, or even seen – decoupling of sense and time restricts any form of embodiment. "*When a tool is physically acted upon, the result is twofold: causality is instantly observed and time is inherently felt*. The interaction between tool and user is substantiated by the result felt in the present. This *coupling between user and tool allows for embodiment*. The most important achievement on TUI is bridging the gap between input and output by displaying outputs and inputs on the same surface, helping to integrate perception and action seamlessly into one environment." Sorensen (2009), apud Sharlin (2004).

ACD models and TUIs alternatively are more open-ended in application, requiring the user to explore rather than *conform* or *adapt* to the tool. *TUI uses an exploratory tactile method to aid with a faster feedback response, which solidifies how actions affect digital information*. ACD and TUI models progressively step further to a sense of embodiment and agency that are applicable in native tool use in real environments using sensorial experience to qualitatively define use and skill.

4. CONCLUSION

Although we can observe a shift in the way we interact with digital interfaces, the paradigms that drive our actions (ACD) and attention (GUI) are still the same. My argument is that visual feedback and behaviours brought by the interface should change – accordingly to the improvements brought by physicality and NUI research – and cease to exist the way we know it. Physicality, haptic, tangible and natural user interfaces allow us to manipulate and input information in ways without precedents. *Although the technology is evolving what is being presented on the "screen" is not:* If what is being displayed on the screen (if there should be any) does not match the possibilities brought by new technologies for interaction, we might not experience the full embodied condition and the easiest and intuitive mode of interaction that could lighten our cognitive burden – that experience will hopefully be part of mainstream, everyday life in a near future.

As Sorensen (2009) states, "GUI *additions* such as Natural User Interfaces, Microsoft's Surface Computer, eye-tracking and other Haptic interfaces are *not transforming the underlying problems created with the GUI*". By that I'm not insinuating that the interface should disappear whatsoever:

> *"So the idea of the invisible interface is too simplistic. It frames interface interaction as an all-or-nothing issue. In arguing against the tyranny of complex interfaces that interfere with the job of getting things done, it misidentifies the problem, demonizes the interface, and abandons altogether the idea that the interface might mediate user action. […] The notion of the invisible interface correctly identifies the inflexible obtrusiveness of conventional interfaces as problematic. Embodied interaction provides some conceptual tolls for understanding how the interface might move into the background without disappearing altogether." (Dourish, 2005: 202–203)*

The interface could change to better encompass TUI and NUI, rather than just co-exist with addictive features in an already exceeded GUI. Research about the different feedback (multi-sensorial) should take place in order to convey more efficiently the possibilities of interfacing with eyes, gestures, voice, touch, emotions and the very mind itself.

NOTES

1) Physical (or embedded) computing, in the broadest sense, means building interactive physical systems by the use of software and hardware that can sense and respond to the analogue world. In the broad sense, physical computing is a creative framework for understanding human beings' relationship to the digital world.
2) http://en.wikipedia.org/wiki/Direct_manipulation_interface
3) http://en.wikipedia.org/wiki/Natural_user_interface
4) In other words, as we act through technology that has become ready-to-hand, the technology itself disappears from our immediate concerns. We are caught up in the performance of the work; our mode of being is one of "absorbed coping." The equipment fades into the background. This unspoken background against which our actions are played out is at the heart of Heidegger's view of being-in-the-world. Dourish (2005: 109)
5) Tangible computing attempts to exploit our physical and spatial skills and to extend interaction into arenas where these skills can be brought to bear for smoother and more natural forms of interaction and expression. By capitalizing on the contextual factors of presence, location, and activity, it sets out to unify computational experience and physical experience, and to apply the experiences and skills of those who understand our relationship with the physical environment – architects, designers, artists, and others – to the design of computation and interaction. Dourish (2004: 189–190)

BIBLIOGRAPHY

BOOKS:
DOURISH, Paul (2004). Where the Action Is: The Foundations of Embodied Interaction. A Bradford Book: The MIT Press, USA.
McLUHAN, Marshall (1964/2009). Understanding Media. Routledge & Kegan Paul, London, Routledge Classics, London & NY.
PICARD, Rosalind W (1998). Affective Computing. The MIT Press, Cambridge, Massachusetts. London, England.
PAPERS:
BUXTON, Bill (2001) in ITU Internet Reports 2005: The Internet of Things – Executive Summary
MARCUS, Aaron (2003: Pages 37–43). Icons, symbols, and signs: visible language to facilitate communication. Interactions, volume 10, Number 3.
NORMAN, D. (2005). Human-Centered Design Considered Harmful. In Interactions, 12. 4, (July + August, 2005), 14–19.
RAMDUNY-ELLIS, Devina; DIX, Alan; HARE, Joanna; GILL, Steve (2009). Physicality: Towards a Less-GUI Interface (Preface). Proceedings of the Third International Workshop on Physicality. Cambridge, England.
SORENSEN, Mia (2009): Making a Case for Biological and Tangible Interfaces. Proceedings of the Third International Workshop on Physicality. Cambridge, England.

Geoff Cox

CENTER FOR DIGITAL URBAN LIVING
DEPARTMENT OF INFORMATION & MEDIA STUDIES
AARHUS UNIVERSITY, DENMARK
imvgc@hum.au.dk
www.digitalurbanliving.dk

OVER-IDENTIFYING WITH REALLY EXISTING SOCIAL MEDIA

"Today the enemy is not called Empire or Capital. It's called Democracy." (Badiou, 2002)

Social media are changing the face of the representational political process. This is partly evident in the apparent success of various campaigns that hope to influence the outcomes of elections and in the rise of services that claim effective participation in the political process. The tactics of dissent have changed too. Seppukoo (http://www.seppukoo.com/), a recent hack of Facebook by Les Liens Invisibles (2009),[1] provides an example where users were able to commit virtual suicide in a ritualistic removal of their virtual identity.[2] Critique here operates in the challenge to the living-death user-experience of Facebook and other similar programs that express the social relation in restrictive form.[3] Behind the friendly (inter)face of neoliberalism, restricted social relations are arguably perpetuated through networks of friends (with everyone more a potential friend rather than enemy), such that antagonistic social relations are masked and the politics nullified.

With no longer a centre of power to be found, or established opposition as such, it is clear that the (class) enemy is increasingly hard to identify across its networks. One of the problems is that a consensus-based model like really existing democracy fails to acknowledge that the political is necessarily antagonistic. Evoking Carl Schmitt's notion of enmity (in *The Concept of the Political*, of 1927), the political differentiation of friend or enemy (aka Facebook or Seppukoo) lies at the heart of this (2007). Amongst others, this is Chantal Mouffe's position too, as she draws upon Schmitt's critique of liberalism to respond to new forms of control, and to stress agonism rather than consensus.

The reference to the Japanese ritual suicide of *Seppuku* (literally stomach-cutting) mentioned evokes the stubborn refusal to fall into the hands of the enemy – and the preference for autonomy even at the cost of one's life.[4] Indeed, "Suicide is the decisive political act of our times" says Franco Beradi (2009: 55). Referring to Stockhausen's infamous comments, he thinks the history of the avant-garde culminates in 9/11: "terrorizing suicide is the total work of art of the century with no future" (2009: 129). Moreover, he thinks this is exemplified in the example of the Finnish youngster Pekka Auvinen, who turned up at school and shot eight people including himself, wearing a T-shirt with the sentence "Humanity is overrated". For Berardi, this typifies the communicative action of the arts and the pathology of the psycho-social system. Similarly, but with less dramatic consequences, virtual suicide stands as the stubborn refusal to operate under intolerable conditions of service and affirms creative autonomy over work and life. The Seppukoo "about" page explains the motivation for the act: "Suicide is a free choice and a kind of self-assertiveness. Unfortunately, Facebook doesn't give to its users this faculty at all, and your account will be only deactivated." **(FIG. 1)**

In her provocatively titled book, *Democracy and Other Neoliberal Fantasies*, Jodi Dean explains the significance of such responses in terms of really existing democracy: "Communicative capitalism captures our political interventions, formatting them as contributions to its circuits of affect and entertainment – *we feel political, involved, like contributors who really matter*." (2009: 49) Participation remains a fantasy in her terms, in clicking a button on an online petition for instance, or making a choice as part of an interactive artwork. The fantasies of social media are a case in point to indicate how the social is produced ultimately as an *interpassive* relation. Liberal democracy exerts a friendly power that doesn't appear violent at all, and individuals actively imagine their participation in what ultimately is part of their subjugation. Again, Facebook comes to mind, and more specifically applications such as *Causes* through which users can imagine the effectiveness of their political engagement by creating petitions in support of a particular cause. The "about" statement expresses the ambition of no less than changing the world:

"Facebook Platform presents an unprecedented opportunity to engage our generation, most of whom are on Facebook, in seizing the future and making a difference in the world around us. Our generation cares deeply, but the current system has alienated us. *Causes* provides the tools so that any Facebook user can leverage their network of real friends to effect positive change. The goal of all this is what we call 'equal opportunity activism.' We're trying to level the playing field by empowering individuals to change the world." (http://apps.facebook.com/causes/about) **(FIG. 2)**

Another project by Les Liens Invisibles, commissioned by Arnolfini in 2010, uses the tactic of *over-identification* to respond to the fantasy of political intervention through such means. (Over-identification is a tactic often associated with Slavoj Zizek, used to expose a position by pushing the system to its extremes in order to conclude that it is unacceptable). Under the conditions of existing democracy, *Repetitionr* (http://www.repetitionr.com/) provides a platform for activism with minimal effort, an online petition service with a difference; offering advanced web 2.0 technologies to make participatory democracy a truly (really-real) user-centered experience. The success is guaranteed as just one click is all it takes to generate a whole campaign with up to a million automatic fake signatures.

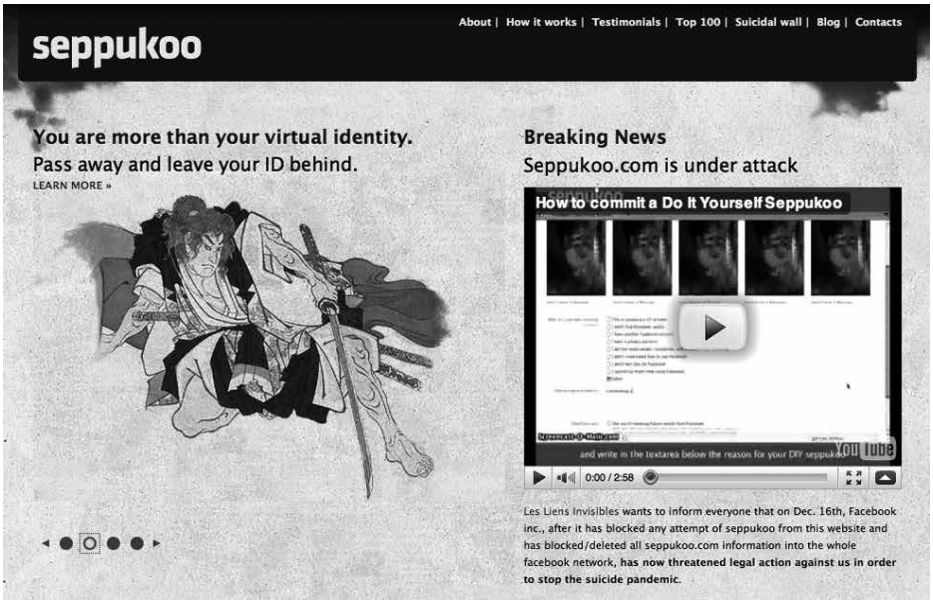


FIG. 1: *Les Liens Invisibles, Seppukoo* *(http://www.seppukoo.com/)*

FIG. 2: *Les Liens Invisibles, Repetitionr* *(http://www.repetitionr.com/)*

The ability of social media to allow interconnections and "active" participation indicates their ideological power, and despite appearances otherwise, how scale-free networks contain hubs and hierarchies. This is what Albert-László Barabási calls "directedness", by drawing upon the principle of "power-laws", a mathematical expression to indicate how complex networks are organised preferentially (2002: 80).[5]

Further drawing upon Michel Foucault's lectures on governmentality (2010), it can be argued that neoliberalism (as distinct from liberalism) has replaced the regulatory function of the state to the market with the market itself, and defined the human subject as reacting to the market rather than the limits of government. The goal of government becomes the construction of certain types of subjectivity in

line with competition within markets (Dean 2009: 52). After the collapse of really existing alternatives (socialism), the fantasies of really existing democracy emanates from this logic. Echoing the directedness of power laws, Dean puts it like this:

> *"Real existing constitutional democracies privilege the wealthy. As they install, extend, and protect neoliberal capitalism, they exclude, exploit, and oppress the poor, all the while promising that everyone wins." (2009: 76)*

Repetitionr reflects the desire for new institutional forms that challenge existing systems of governance and the limits of representational structures, as an overt expression of *non-representational democracy* – or, in other words, a form of democracy that is uncoupled from sovereign power (Rossiter, 2006: 39). The fundamental struggle, for Franco Berardi, is between machines for liberating desire and mechanisms of control over the imaginary. Thus, various liberatory strategies such as refusal of work, the invention of temporary autonomous zones, free software initiatives, virtual suicide, and so on, offer "dynamic recombination"; they offer progressive innovation not new forms of totality (2009: 72). Here, Berardi is addressing commonly identified problems associated with the Hegelian historical subject, and stressing processes of subjectivation (instead of the subject – taking the phrase from Guattari, if not Foucault). The same might be said of program code in that it is not simply deterministic or totalitarian despite symbolizing the nonhuman universality of the circulation of information and finance. Indeed, the architecture of scale free networks like the Internet exemplify the fantasy of global unity.

In liberating desire, new publics need to be imagined – in coalitions of human and non-human agents involved in radical networks – that engage with and modify the infrastructures they inhabit as an extension of the public sphere. The cultural significance of this is somewhat captured by the term *recursive public* to account for the ways in which the public is "a collective independent of other forms of constituted power and is capable of speaking to existing forms of power through the production of actually existing alternatives" (Kelty 2008: 3). Somewhat related to the concept of the public sphere, a recursive public is capable of modifying itself through participation, relatively unmediated by higher authority. For Christopher M. Kelty, the collective technical experiment of the Free Software movement is an example of a recursive public that draws attention to its democratic and political significance and the limitations of our understanding of the *public* in the light of the restructuring of power over networks, struggles over intellectual property rights and sharing of code. As a consequence, a reconceptualisation of political action is required that combines traditional forms of expression such as free speech with coding practices and a sharing ethos associated with Free Software. To Kelty, this is encapsulated by the phrase "running code" to describe the relationship between "argument-by-technology and argument-by-talk" (2008: 58). In this way, and again making reference to Hegel, a free software recursive public potentially turns from a "class-in itself to a class-for-itself" (Kelty 2008: 116).[6]

Evidently publicness is constituted not simply by speaking, writing, arguing and protesting – but also through acting on, and modifying the domain or platform through which these practices are enacted. To Jacques Rancière, the origin of the political lies in the properties of its subjects and in how they come together, how they "part-take", or participate in contradictory forms of action – between acting and being acted upon. According to Rancière, it is the very "axioms of democracy" – of ruling and being ruled – that require rupture to open up discussion of the constitution of the subject and its relations. Although taking a different position to Rancière on these issues, the point for Dean is that democracy is closely tied to systems of legitimacy (the law) such that it becomes the justification of various tyrannies – such as invoked by the "state of exception" despite its fundamental contradiction with the principles of democracy. Really existing social media tend to consolidate the rule of this logic, and this leads Dean to conclude that democracy is not the answer to contemporary political problems but a symptom (2009).

If *Repetitionr* is an example of over-identification with real existing participatory democracy, then the provocation is that we need to develop far more imaginative strategies and techniques of organisation, and far better social media in its service.

NOTES:

1) Les Liens Invisibles is an imaginary art-group from Italy, comprised of media artists Clemente Pestelli and Gionatan Quintini, http://www.lesliensinvisibles.org/

2) Note similar projects such as Cory Arcangel's Friendster Suicide, http://www.coryarcangel.com/2005/12/friendster-suicide-live-in-person-dec-2005/ and moddr_lab's Web2.0 Suicide Machine, http://suicidemachine.org/

3) The action provoked a litigious response by Facebook not least. See the 'cease and desist' letter from Facebook's lawyers, and the reply – both linked from the Seppukoo home page, http://www.seppukoo.com/

4) In turn, the project is also inspired by to Seppuku!, the ritual suicide that some members of the Luther Blissett Project committed in 1999, to declare the end of their multiple identities project (and the death of net.art). Thanks to Tatiana Bazzichelli for pointing out this reference, http://www.lutherblissett.net/archive/452_en.html

5) Barabási quotes the work of the Italian economist, Vilfredo Pareto, who observed universal laws in that 80 per cent of peas were produced by 20 per cent of pea pods, to explain the 'laws behind complex networks' (2002: 66 & 73).

6) It is in this sense that consciousness is reframed.

REFERENCES:

ALAIN BADIOU (2002). 'Prefazione all'edizione italiana'. in Metropolitica, Naples: Cronopio.

ALBERT-LÁSZLÓ BARABÁSI (2002). Linked: The New Science of Networks. Cambridge, Mass.: Perseus.

FRANCO 'BIFO' BERARDI (2009). Precarious Rhapsody: Semiocapitalism and the pathologies of the post-alpha generation. London: Minor Compositions.

JODI DEAN (2009). Democracy and Other Neoliberal Fantasies: Communicative Capitalism and Left Politics. Durham: Duke University Press.

MICHEL FOUCAULT (2010). The Government of Self and Others: Lectures at the College de France 1982–1983. Basingstoke: Palgrave Macmillan.
CHRISTOPHER M. KELTY (2008). Two Bits: the Cultural Significance of Free Software. Durham: Duke University Press.
CHANTAL MOUFFE (2007). 'Artistic and Agonistic Spaces'. In Art & Research, vol 1, no. 2. http://www.artandresearch.org.uk/v1n2/mouffe.html
JACQUES RANCIÈRE (2001). 'Ten Theses on Politics'. In Theory & Event, 5:3. http://muse.jhu.edu/journals/theory_and_event/v005/5.3ranciere.html
NED ROSSITER (2006). Organized Networks: Media Theory, Creative Labour, New Institutions. Rotterdam: NAi / Institute of Network Cultures.
CARL SCHMITT (2007 [1927]). The Concept of the Political. Chicago: University of Chicago Press.

Dew Harrison

ASSOCIATE DEAN FOR RESEARCH AND POSTGRADUATE STUDIES
SCHOOL OF ART AND DESIGN
UNIVERSITY OF WOLVERHAMPTON, UK
dew.harrison@wlv.ac.uk

REAL-ISING THE VIRTUAL

MATERIALIZING THE VIRTUAL

The Second Life platform is relatively new and still under development, but there are a number of artists beginning to explore the possibilities of this virtual world outside it's commercial premise. The *Kritical Works in SL* curation project set out to harness creative activity inWorld and for its second phase had ten major SL artists on board creating work for the ISEA2009 exhibition last August (Doyle, 2009). For phase one of the project the work of invited SL artists was exhibited online at ISEA2008, the pieces created largely concerned place and identity. Artists and curator only conversed inWorld and some were known only by avatar (Doyle, 2008). For phase two the artists were better known in the real world e.g. Lynn Hershman-Leeson and Paul Sermon. They were invited to the island to develop their practice with regard to their bridging of the virtual with the real world, and two of them created physical objects which responded directly to their virtual counterparts. These two artists, Joseph de Lappe and Denise Doyle, materialized their avatars as signifiers of their true animated Second Life forms. Their materialized objects were exhibited in the Golden Thread Gallery in Belfast where the gallery viewer met with the figurines before sitting at the computer and logging on to Second Life to meet the 'living' avatars. Many of these gallery-goers were unfamiliar with accessing a virtual platform and so used these statues as transitional objects to conceptually move them across and into the virtual world of SL (Harrison, 2009). Making the virtual more familiar and therefore "real-er" for them.

(FIG. 1)

Bringing audiences across the divide between the real and the virtual is also being explored through other means at CADRE (Centre for Art and Design Research and Experimentation), at the University of Wolverhampton. Within the *Shift-Life* project, the manipulation of real-world objects had an immediate effect on those in a virtual environment. This project gave the participants the feeling that the virtual creatures where 'real' in a real world sense, even though they had no substance and could not be touched or handled.

DARWINIAN SHIFT-LIFE

2009 was the 200th anniversary of the birth of Charles Darwin in Shrewsbury, UK, and the 150th anniversary of the publication of *On the Origin of Species*. As part of the national celebrations underway, *Shift-Life* was commissioned for exhibit at *Shift-Time – a festival of ideas in Shrewsbury*, summer 2009 (festival website, 2009). In response to Darwin's idea, the aim of this work was to create an "alternate" biological life as a set of artificial or virtual organisms that possessed similar biological processes to their "real" counterparts, such as growth, reproduction, and adaptation. The virtual life forms existed in a nutritional (trophic) relationship of prey/predator, and included both rooted (sessile) and free ranging (vagile) organisms. Animal-intelligence was programmed into the virtual organisms to allow them survival strategies. The project also involved the construction of an enhanced mixed reality-based virtual environment to support the organisms. The climate of the virtual environment was directly influenced by the data gathered by wireless sensors (phidgets) in the real world landscape (sand box), plus implements (lights, shakers, pourers …) that altered the parameters (temperature, humidity, acidity, stability …) and so allowed visitors to change the condition of the virtual landscape.

The installation comprised of a large "sand-pit" box representing the virtual world terrain, this encouraged interactivity for visitors who could physically manipulate a set of implements to radically alter the living conditions of the fantasy creatures in their virtual ecosystem, projected into the installation space. By pouring liquids, switching on lights, moving objects etc., in the sand box, visitors could see immediate responses to their actions played out in the animated ecosystem as the life forms adapted to survive. Interacting with the real world landscape and observing the instant affect a visitor's actions had on the animated ecosystem projected into the installation space, proffered an understanding of how causing changes in environmental conditions, forces evolutionary developments on the life-forms in them.

In attempting to both respond to the idea of a young Darwin and to elucidate his thinking in a holistic hands-on way, the fantasy creatures in the box were bug-like, as reminiscent of his/any childhood and so took the form of jelly sweets and allsorts. The pink "allsort" creatures were carnivorous, while the green "jelly-bugs" were herbivores, the herbivores' food plants implied "penny sweet" bushes and "hundreds and thousand" trees. Darwin was born and spent his childhood in Shrewsbury, where he began his observation of natural life forms and started his vast collection of beetles. This boyish interest became life-long and led to his great insights later on as an adult. The virtual world of "bugs-in-a-box" was projected down into a wooden 1.2 meter square box arrayed with sensors, this was filled with polystyrene beads held under a muslin sheet and surrounded by a set of manipulative tools which, when activated, affected in real-time the virtual environment causing the creatures to adapt to survive in their rapidly changing ecosystem. The low-tech tools were plastic hammers for creating earthquakes, children's watering cans to alter the humidity and pH count and a desk lamp to affect temperature and intensity of sunlight.

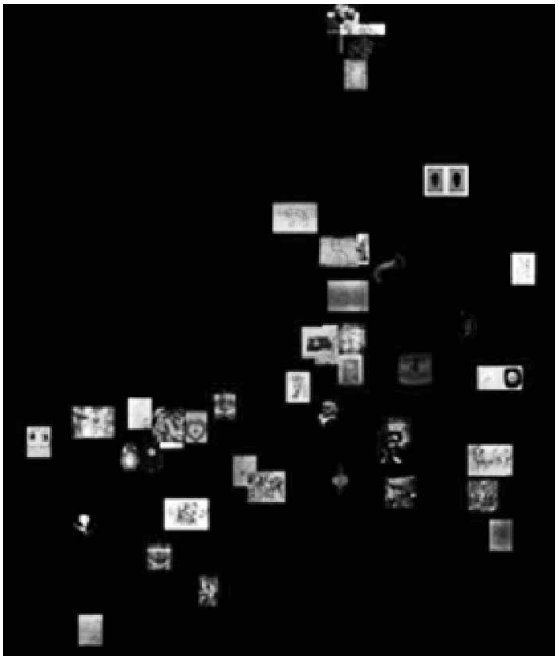


FIG. 1: *The materialized avatars from Kritical Works in SL ii*

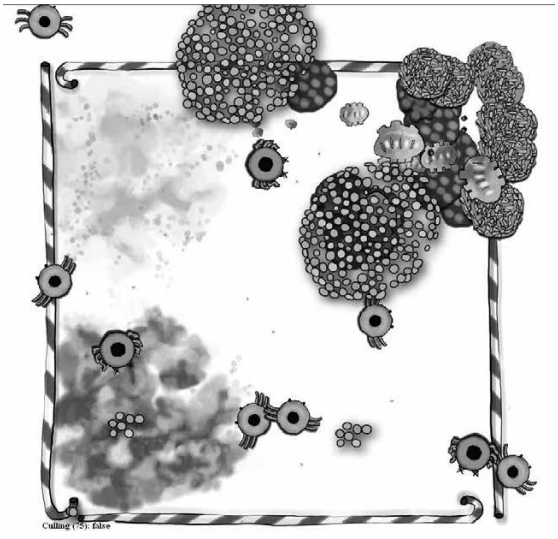


FIG. 2: *The "sweet" artificial life-forms*

(FIG. 2)

The wooden virtual bug box was large enough to allow for small groups of people, families, and individuals to interact with it and with each other, it was accessible to both children and adults. As they poured water, the humidity would alter and some plants die back, this meant less food for the herbivores and consequently less bugs to eat for the carnivores. Switching the lamp on would dry out the atmosphere and enable plants to grow again, however too much 'sun' could be detrimental to the point of wiping out the carnivores entirely. They could, in fact, become extinct due to their reproduction method of cloning, unlike the egg laying herbivores. When this occurred, the programme had to be re-started to reassure the smaller children that they weren't responsible for a complete genocide. Pouring vinegar from a watering can would "feed" the red bushes, toxic to all the creatures, but this could be remedied by pouring baking soda liquid and restoring the plant balance, the herbivores' food. Hammering on the box sent the carnivores into panic mode and they would run for cover under the trees (Harrison, Ch'ng et al, 2009).

For S*hift-Life*, AI behaviours were attached to a virtual world of animated objects featured as creatures and plants. These 'families' were grouped by form and colour, it was the changes in these identifiers that was of interest when observed by viewers who were causing physical upheavals in the environment to which the artificial families of life forms instantly responded. The idea of employing AI behaviours to virtual creatures as an explication of Darwin's "big idea" derived directly from a parallel project concerning the works of Marcel Duchamp.

RE-THINKING DUCHAMP

Duchamp's "Large Glass" entitled "La Mariée mise à nu par ses célibataires, même" or "The Bride stripped bare by her bachelors, even", is arguably, the most enigmatic, complex and ambiguous piece of art to date in that it not only encompasses his Green and White boxes of notes but acknowledges his entire body of work laying it open to interpretation by the viewer. The white box, *a l'infinitif*, mostly refers to Duchamp's thoughts on the fourth dimension which he wanted to incorporate in his art works (Duchamp, 1966/1967). In the early 1900s, the technology was not sophisticated enough to support his ambition of portraying his "Bride" in the fourth dimension. So he began to realize her with painterly abstractions culminating in the flatness of glass as a material nearing the state of no thickness or "inframince" and therefore acting as a signifier to the fourth dimension. He replaced traditional (thick) paint and canvas as tools for picture making and renounced painting, declaring his "Large Glass" to be "a three-dimensional physical medium in a fourth dimensional perspective" (Duchamp, 1966/1967). Although, from Duchamp's notes it would seem that his interest in the fourth dimension was not aligned to the, then contemporary, "relativity theory" proposed by Einstein but to the idea that the fourth dimension could be understood through geometry progressing from the n-dimension and aligned to the mathematics of Poincaré.

Within my research I have continued to realize "The Bride" using contemporary technology and have so far transposed his "Large Glass" across time and space over the Internet and into 4D form with 25 collaborators through 25 websites, and then inter-related Duchampian images with his notes etc., into discreet offline systems (Harrison, 1997). Later works, "Deconstructing Duchamp" and "Star Glass", transcoded the "Large Glass" into hypermedial art systems where texts, images, animations and sounds were networked into one overarching "concept". The hypermedia technology required mouse and keypad access which brought an unintended game-like element to my works

(Harrison, 2006). To avoid this quality, Duchampian archaeologies then continued with a series of digital interactive movies projected onto a canvas bridging new media and traditional practice through digital video. The intent was to capture the relationships between Duchampian objects and his statements in a more fluid, less game-like, way and in so doing give a holistic view of his oeuvre.

Recent works have involved bestowing digitised Duchampian items with "flocking" behaviours in order to interrelate them semantically, the result has been more akin to a projected animated painting in that they are not all interactive, but require contemplation in considering their shifting positions. "Flocking" is more usually associated with the collective animal behaviours exhibited by many living beings such as birds, fish, bacteria and insects, but can be more largely understood as the motion of a large number of self-propelled entities. It is considered an emergent behaviour arising from simple rules that are followed by individuals and does not involve any central coordination. Flocking behaviours can be applied to animal-like and non-animal-like entities and the first experiments with Duchampian items have been simple, as with the *Shift-Life* creatures.

FLOCKING DUCHAMPIAN ITEMS

Moving images have incorporated the "swarming" and "clustering" of the content of his boxes of notes with seminal images from his body of work, displaying the relationships between the thoughts and ideas of Duchamp in a more natural, realistic and intuitive way than "point and click" or "roll-over" interaction. The Duchampian objects move towards or away from each other according to their semantic relationships when in close proximity, clearly showing the "families" of images, texts etc., and the oscillations due to the similarities that occur between them. An over-simplified example is: the word "rain" may move away from "stone", until the word "hail" appears and oscillates between "stone" and "rain". As the multimedia items required for these experiments had been re-cycled from the earlier hypermedia projects, they are really *ready-mades* newly re-connected into a more organic and dynamic display of the relationships between them. Viewers are able to move the items around and drop-in others, in order to watch them re-position within the Duchampian mindset (Harrison, 2009).

DEVELOPING BEHAVIOURS

The next phase is to work with Duchampian text strings, with the intent of clustering words and sentences into positions around an argument to further make sense of Duchampian non-sense. Text and language are the tools of a post-Duchampian conceptual practice. The text strings could evolve to be statements and words illuminating a set of positions around the art debate where words can be added by the viewer to sway the argument, keeping it alive and dynamic. The argument pattern should evolve from the individual behaviours of the objects.

Shift-Life was essentially a sugarcoated version of "nature red in tooth and claw", our audiences enjoyed the playful engagement but also spent time quietly observing, finding it visually mesmerising. They would remain for some time in a state of reflection to passively observe the other's actions and watch the life-form changes taking place. Such contemplation enabled the virtual world to be understood as an analogy for human activity and its effect on global climate change within our own real world, bringing the issue closer to home, really real. *Shift-Life* was set at a self-sustainable and stable level and if left without the intervention of human meddling it could evolve to evidence unpredictable social patterns from the life-forms' individually programmed behaviours.

Future work on both the Duchamp and Darwin projects will explore setting parameters for unpredictability and watching behaviours develop, real behaviours from virtual objects interrelating and responding to our real world actions – one step further to real-ising the virtual, which may then impact upon *Kriti* SL Island works.

REFERENCES:

DOYLE, D. (2009). Kritical Works in SL ii. Exhibition Catalogue. Wolverhampton: CADRE publications.

DOYLE, D. (2008). Kritical Works in SL. Exhibition Catalogue. Morrisville, North Carolina: Lulu Publishing.

DUCHAMP, M. (1966). l'infinitif, (The white box). New York: Cordier & Ekstrom, 1967.

HARRISON, D. (2009a). Shift-Life Interview at Shift-Time – a festival of ideas. http://www.shift-time.org.uk/video/video-shift-life.shtml

HARRISON, D. (2009b). The Writing on the Wall. In: Proceedings for ISEA2009, Belfast, August. (due 2010).

HARRISON, D. (2009c). The Re-materialisation of the Art Object. In: Object and Identity in the Digital Age, Proceedings for CHArt 2009. 25th Annual Conference, Birkbeck, London, November, (due 2010). Abstract published. http://www.chart.ac.uk/

HARRISON, D./CH'NG, E./MOUNT, S./MOORE, S. (2009). Experiencing the Big Idea. In: Proceedings for DAC09, Los Angeles, December. http://escholarship.org/uc/item/9q6716gd

HARRISON, D./Parker, M. (2006). Game-like art/Art-like game: Reflections of a Star World in a StarGlass In: Proceedings for Gaming Realities: A Challenge for Digital Culture, medi@terra Art and Technology Festival 2006, Athens, October. Publisher: Fournos, Athens.

HARRISON, D. (1997). Hypermedia as Art System. In: DRUCKER, J. Ed. Digital Reflections: The Dialogue of Art and Technology. Art Journal, Fall, 56 (3). pp. 55–59.

Blanka Earhart

blanka@2helixdesign.com
BlankaEarhart.com
2HelixDesign.com

THE CLOUDY SELF AND THE EVOLUTION OF CONSCIOUSNESS

Every day we navigate through an ever changing experiential and conceptual landscape. We invent narratives that will move us through this space in meaningful ways or destroy existing ones in favor of more sublime readings. The fully satisfying integration of this landscape into our self-image is yet to be found. In this paper, I propose a perspective that finds a new location for the center of gravity of the self vis a vis virtual worlds as exemplified by electronic media. It is a view that places the focus in the cloud of presence and agency that one inhabits rather than in a body. This approach organizes the new modes of experience and knowledge around a sense of the self that is capable of creating meaning.

First, I will establish the basis of my argument in phenomenological terms and introduce the location of the self as it originates from consciousness. Then, I will discuss a way to anchor the self within our experience by way of developing a concept of consciousness-producing organ and a strong subject understood as the acting self. I will follow with a description of the nebulous space inhabited by the subject to finally sketch out a couple of directions for future enquiry.

1. PHENOMENOLOGICAL CONTINUITY AND THE LOCATION OF THE SELF

The narratives giving structure and meaning to our world keep on developing and changing. With the popularization of ideas based on quantum theory, the experience of the World Wide Web, electronic devices and high-speed travel amongst others we find ourselves navigating a hybrid experiential territory. Despite the fact that this has been the case for a number of decades now, we are still yet to find an overarching narrative that would produce meaning on a human scale and incorporate all of our experiences into a coherent whole.

One way to resolve this cul de sac is to approach our knowledge and experience in terms of constitution of the self. Changing technology and understanding of the reality gives rise to new ways of engaging with the world. Human psyche is able to reconcile these experiences as long as the engagement is meaningful. This is not a new development. At the turn of the last century, Edmund Husserl describes his experience of shuttling between two experientially different worlds in the following passage:

> *"[…] the world in the ordinary sense of the word, is constantly there for me, so long as I live naturally and look in its direction. […] And there is no need to modify these conclusions when I proceed to appropriate to myself the arithmetical world, and other 'worlds' […] The natural world still remains 'present,' I am at the natural standpoint after as well as before, and in this respect undisturbed by the adoption of new standpoints." (Husserl, 19)*

The actual experience of the self submerged in the different worlds remains for the author the same.

This possibility for meaningful continuity inspires me to discuss consciousness and formation of the self in phenomenological terms. In my experience, consciousness is produced in the process of contemplating the outside objects. The self is not a production of our body solely but arises from the interaction of the mind with the world of outside shapes. We describe ourselves in opposition to that, which we encounter.

The understanding of our capabilities, preferences, sense of belonging and limits form a constellation that we understand as the self. Additionally, when concentrating on the interior sense of the self, one will discover not a pure hum of the brain turning but an awareness of something other than one's mind. Jean-Paul Sartre illuminates this point as follows:

> *"Consciousness is consciousness of something. This means that transcendence is the constitutive structure of consciousness; that is, that consciousness is born supported by a being, which is not itself." (Sartre, 61)*

Once we conceive of consciousness as a phenomenon that comes to be at the intersection of the outside and the inside, we can envision the self being produced by this consciousness at the same plane. The difference between the two experiential locations, and their mutual interaction, creates a subject conscious of itself.

This process is aided by technological advances enabling experience of the outside that is close to seamless with the sense of the self. The electronically enabled world, for example, reads very often as a mental space. Our experience of console platforms, computers and the Internet parallels the experience of our mind echoing its features such as imagination, memory, thoughts and logic. Understanding this world as formative to our self-image comes with minimal effort.

2. ORGAN VERSUS EXTENSION

The interpretation of media and technology as an extension of human faculty, which was popularized by Marshall McLuhan creates a conceptual stalemate. I believe that extension implies a reduction in intensity. The farther the extension reaches, the weaker the involvement of the initiating entity. Such an extension results in diluted self-representation. This state may even culminate in complete

abandonment creating a schizophrenic situation, in which the extension is viewed as a separated fraction of the self or a parasite. Such an extension is unpredictable and disassociated. On the human level, it becomes difficult to invest it with gravity and meaning.

Such phenomena can be encountered, for example, on the Web in the culture of networking. If we conceive of social networking profiles as human extensions, it becomes easier to distance ourselves from them and deny taking full responsibility for our online interactions. What follows is a limit that we place on the intensity and meaningfulness of our relationships within this structure. It is easy to accept an invitation if it doesn't require any additional commitments. The result is a grouping of loosely related self-representations that remains vague in its meaning, unless doubled in the physical world.

It will take a shift in our perception of media and technology to create engaged relationships between us and what we currently perceive as our extensions. I believe, the entities, which we create on the web, for example, exist in meaningful ways only when infused with our own life. It is a mistake to view them as an extension and as such they are redundant to our physical existence and more boring than real life. Conversely, if we claim the ownership of these entities and return them into our self-image, they will attain gravity and will sit more comfortably within our life. Conceptually shifting the weight of our self-image towards those entities will create more engaged relationships.

Thinking of software as an aid in production of additional human organs can facilitate this shift. This concept goes beyond understanding technology as an extension and presupposes it as an inherent human growth. I am constructing the idea of this organ by inferring its existence from its effect, which is the human capability for producing consciousness and the sense of self. Conceptualization of such an organ gives us a chance to anchor our self-image more firmly in the world of our choosing.

The location of that organ is uncertain precisely because it does not reside entirely in our physical body. We can infer however from the location of our consciousness that it comes into existence between our body and objects in the world. The consciousness-producing organ in recent decades gained another augmentation, software. In the virtual world, software provides us with the agency to develop consciousness into further manifestations and in this act it is incorporated as part of the organ.

3. THE STRONG SELF AND ITS ORGAN

Establishing the reality of this consciousness-producing structure requires a strong subject, based in meaningful interactions. The nebulous constitution of the self is solidified in an acting subject, one that works across the physical body, objects in the world and virtual vehicles. In order to have a coherent experience of thus conceived self, the agency of the subject requires an individual entity as an origin.

This view stands in opposition to the concept of body without organs developed by Deleuze and Guattari in *A Thousand Plateaus*. The authors conceptualized a body that is rid of subject and its interpretations. The body without organs is a body without the self. "The BwO," they write, "is what remains when you take everything away. What you take away is precisely the phantasy, and signifiances and subjectifications as a whole." (Deleuze & Guattari 151) The subject's sense of wholeness and possibility for meaning are cast aside in favor of the decoded body and the formless, undiscriminating plane of consistency.

> *"The plane of consistency would be the totality of all BwO, a pure multiplicity of immanence, one piece of which may be Chinese, another American, another medieval, another petty perverse, but all in a movement of generalized deterritorialization in which each person takes and makes what she or he can, according to tastes she or he will have succeeded in abstracting from a Self, according to a politics or strategy successfully abstracted from a given formation, according to a given procedure abstracted from its origins." (Deleuze & Guattari, 157)*

In this act of equalization of former meanings the body reaches its capability to experience various intensities without blocking or directing them. This is the ground zero, a place of departure towards production of the real without the human subject.

This seepage of meaning can be observed in areas of culture, corporate and political endeavors and most immediately for a lot of us on line. It is realized in the culture of appropriation, remixing, casual groupings of objects and media assemblages with uncertain origins. This attitude also involves our self-image and modes in which we distribute our presence. It takes place on line, for example, through creation of various profiles that present multiple facets of a person as enumerations of text and visual media. These areas of our agency, when unattended to, become bizarrely foreign to us, and resemble a runaway organ. All the abandoned email accounts that fell out of use, their passwords forgotten, taunt our sense of wholeness from the virtual space.

Schizophrenia sets on when the originator disowns the manifestation of the self. Yet distribution and understanding of the self through different vehicles doesn't have to dilute us. We transcend our present selves in the physical world constantly in every act of perception and effectively succeed in creating the sense of self. The other mediums in this sense are no different. From experiential point of view, the virtual world allows additional opportunities for perception, which result in a similar self-affirmation.

4. THE CLOUDY SELF AND CONSCIOUS EVOLUTION

Our experience is dictated not solely by what surrounds us physically. Electronic platforms running software provide the space for our senses, imagination, thoughts and intentions to play out. By having these experiences, we negotiate a space for our sense of self that transcends the physical world. In doing so, we become clouds of presence that span across different platforms and conceptual spaces. We can shift the weight of our consciousness to incorporate any given new territory within which we can act. In other words, the areas of our agency create the cloud.

On a basic level, we encounter and deal with different intensities and densities, which can be understood in terms of either larger coherent entities united by agency or relationships of units, be they particles or electric charges. The above conception of intensities parallels Baudrillard's view of media in terms of intensity circuits that instead of carrying a message, transform all input into code. Intensity then

is a charge rid of meaning. This unstable reality, viewed in terms of parts as opposed to entities, hunts our sense of self. The final reality is located not at some ever-elusive frontier, which is being removed farther with every degree of resolution. Instead, it is a nebulous reality constructed through consciousness and the self in the middle of all that we are able to perceive and act upon.

If Deleuze sought to rid the body of organs, I would like to expand the body to include additional ones. Software is the main means for humans to exercise their agency on a console, machine or online. In the virtual space, software contributes to the consciousness-producing organ, described previously, by way of verifying the self through actions. We can gain access to working on our consciousness directly via software if our body image expands to include this organ.

If our self exists somewhere on the intersection of the body and the worlds we perceive, be they virtual or physical, then manipulation of those worlds will affect the conscious self. In this sense, by manipulating software, we have direct access to development of our consciousness. Humans have been evolving for hundreds of thousands of years. For the first time, we are conscious of and able to shape our own evolution.

5. IDEAS FOR FURTHER PRODUCTION

This realization carries consequences for artist, programmers, cultural producers, and a whole array of media creators. The challenge is to organize and process the new capabilities and concepts in ways meaningful to humans and to integrate the expanded experience into our self-image. We cannot disown our reflection and cut it loose in the cyberspace or a conceptual space for that matter. Instead, we can place ourselves in the middle of the cloud formed by our agency and own it as we own our bodies.

Another area of inquiry is the subject's permeability. The question is how to make meaning and embed the subject in a world of horizontal information distribution without disrupting the free flow of stuff. This requires reinvention and creation of the self that is porous enough to let the information circulate and strongly defined so it communicates presence and agency.

Some artists have already jump-started the process. Nine Inch Nails for example makes a large number of their media available through their website. The latest full-length album *The Slip* is available as a free download complete with multitracs. The visitors are encouraged to remix the songs and upload them to the site so others can listen and comment. This generous opening up does not however in any way diminish or dilute the essence of the main entity – Nine Inch Nails.

Additionally, being aware of our technology, as a force that in tandem with the body creates our consciousness, is to understand that one can work directly on the consciousness itself and purposefully shape its development. Finally, meaning is created around a strong subject that can relate to and negotiate its existence with other entities be they physical, virtual or conceptual. How we establish such strong subjects is a fertile ground for exploration.

BIBLIOGRAPHY

BAUDRILLARD, Jean. Simulacra and Simulation. Ann Arbor, MI: The University of Michigan Press, 1994

DELEUZE, Gilles and GUATTARI, Felix. A Thousand Plateaus, Capitalism and Schizophrenia. Minneapolis: University of Minnesota Press, 1987

HUSSERL, Edmund. Ideas: General Introduction to Pure Phenomenology, Amherst, NY: Prometheus Books, 1976

MCLUHAN, Marshall. Understanding Media: The Extensions of Man, Cambridge, MA: The MIT Press, 1994

SARTRE, Jean-Paul. Being and Nothingness. New York: Citadel Press, Kensington Publishing Corp., 2001

Heinrich Falk

AALBORG UNIVERSITY, DEMARK,
falk_h@hum.aau.dk

CONSTRUCTING REALITIES THROUGH FICTIONALISATION – *On Believing in Creation and Creation of Believing*

I

This paper presents some very general thoughts on the bearings of fictionalisation in art/science-projects. The plausibility of its hypotheses has to be proven by analyses of concrete projects. In this vein, the paper begins with a bold generalisation, namely that art pieces are considered to be or work with fiction. Art is communication by means of deliberately constructed realities that "are not". In order to be able to engage with art, we need to suspend our inherent "academic" disbelief in the reality of the artwork. In contrast, the objective of all academic disciplines is to get hold of an already existing reality (truth). Due to the limited length of the paper, it is not possible to describe the complex ontological, epistemological and social status of both science and art. Here, I have to settle for the observation that science and art have been guaranteeing each other's ontological status and social function, the former being an investigation of reality, the latter a construction of fiction. Of course, artists have always felt the severe and very tangible reality of their business, yet art experience for the audience is based on the ability to recognize the ontological difference between fiction and reality. Art thus reinforces the reality of science and everyday life.

However, throughout recent decades, many artists have been collaborating with scientists in creating art projects that confound historically defined purposes and ontological definitions. This is the case in a number of mixed fields such as bio-art projects, which all wish to create new manifestations of life in a broad sense. Kac generated a modified Bunny, SymbioticA is experimenting with life tissue and Stelarc recreates the human body. Development of intelligent programs and robots are the declared objective of much collaboration between computer science departments and artists resulting in various kinds of cybernetic artworks being autonomous agents. Also social art strategies render obvious realities by constructing performative spaces of mediated interaction and collaboration. Knowbotic Research often creates interactive networks that not only are critical in portraying existing conditions, but furthermore engage the participant in possible solutions of societal challenges by establishing 'real' networks of communication and concrete participation in different art projects. Also initiatives and art collectives like Blast Theory, Etoy, Superflex, The Yes Men, etc. create new distributed realities that go beyond the conceptually confined domain of fiction, often, but not necessarily, by means of new media technologies.

Likewise, many academics in various fields have embraced art and artistic methodology in order to innovate their approach towards research (social sciences, engineering. etc.) and to communicate their results to a broader public (e.g. Exploratorium). Many engineering and computer science departments are employing and collaborating with artists or academically educated aestheticians.[1] Cross-disciplinary research projects are seen more often today.

Seen in an art historian perspective, these "art/science-pieces" can be construed a legacy of the different avant-garde movements' yearning for the real and their consecutive disrespect for societally allocated art domains and functions [2]. However, these vanguard art projects and their philosophical underpinnings (e.g. Foster, Schechner, Danto, and many more) reveal important perspectives, not on the notion of the (restricted) reality of fiction, but rather on the construction of those realities through "make belief". This poetological shift has consequences for the above mentioned art/science projects. It advances the hypothesis that art/science projects elicit a shift from an academically informed "suspension of disbelief" towards a "performatively created believing". In the following I want to reflect on the creation and function of "believing" in art/science projects.

II SUSPENSION OF DISBELIEF OR MAKE-BELIEVE

S. Coleridge (1817 (2004)) coined the widely known concept of *willing suspension of disbelief* as a novel writer's justification to write about fairies and other scientifically rejected phenomenon. This concept succinctly developed into the audience's psychological attitude that allows for pleasurable perception of fictional art works of all kinds. It is notable, that his expression uses the principle of double negation, as if the question of reality is not a question at all. A double negation is not same as the positive *make-believe*.

Coleridge's double negation presents us with modernity's Cartesian and scientific negativism, where disbelief lies at the methodological roots of gaining knowledge and apprehending truth. The negation of the negation (*suspension of belief*) can therefore not be summed up by the term *belief*. The art of (double) negation rests as an intrinsic part of the acknowledgment of the critical divide between *is* and *is not*. We simply need to know about the art's fictitiousness before we can immerse ourselves into perceptional and intellectual explorations of art works.

Kendall Walton (1990) nevertheless uses the positive term *make-believe* in order to seemingly describe the same process of pretending on the basis of assuring the contrary as a stable ground. Walton differentiates between Coleridge's concept, being an entirely internal

psychological practice, and his own, being a performative collaborative practice initiated by the work of art itself. Art is seen as a *make-believe* play that is not based on a solitary beholder, but on an audience as a public collective. The members of this collective have to repeatedly re-assure themselves of the fictitiousness of the game of art. Mimesis as *Make-believe* is in Walton's view always an ongoing performance of pretence, never abolishing the foundational distinction between reality and representation.

Schechner (2002) tries to outline the difference in another way; he designates the term *make-believe* to games, rituals, and the arts, which all are based on the preservation of the boundaries between the real and the pretended; and *make-belief* to social actions, which presupposes an intentional blurring of the boundaries as an act of "convincing" an audience about the truthfulness of the described and conveyed assumptions. Schechner's distinction focuses on the different types of performance. I, on the contrary, want to shed light on the very formation of "believing" in prospective realities through performative acts, thus implying that "believing" is a result of a performative and phenomenological engagement. (Obviously, my claim is nurtured by my "belief" in the formative potential of *make-believe* of art.) This seems not to be the foundational conviction of scientific research though, since it always already deals with reality and truth. But Bruno Latour (1999) taught us differently.

But what about art/science projects? How do these projects negotiate between the imaginative dimensions of art and the reality involved in scientific investigation?

III FICTIONALISATION

The collaboration between science and art has, as one of its main methodological points of convergence, the process of "fictionalisation"[3]. Science research projects are interested in the arts' capacity to create a fictionalized possibility space that liberates science from the positivistic heritage, thereby allowing for more idea based experiments (abduction). Collaborating artists are on the other hand interested in scientific know-how, laboratory facilities, and cross-disciplinary teams that elicit new approaches. They are interested in the reality of science. (Of course, there are huge differences between the social sciences and the natural sciences in terms of method, objectives, theory, etc. To elaborate on these differences is beyond the scope of this paper.)

It thus seems that a re-definition of the term fiction is appropriate. Wolfgang Iser (1983) defines fiction as a transition program that mediates between two realities (reality and the imaginary). His subject matter is the literature, but the core argument of his thinking can, in my view, be applied to all art forms and styles of (re-)presentation, because fiction no longer designates an ontological state but an act. Fiction is the action of feigning in terms of transgression, yielding an "irrealization" of the real and the realization of the imaginary (Iser 1983). This is done by the process of selection and combination of elements of the prospective artefact's "Umwelt" (environment). "Umwelt" is the surroundings of artefact, it consists of either elements from the so-called real world or intertextual elements drawn from other art works. The process of fiction is thus an act of bracketing or framing or even better "clearing" (to use Heidegger's term). Phenomena of the "Umwelt" are broken down into discrete entities followed by the subsequent selection and re-combination that eventually leads to the creation of an artefact. In this respect, the art piece consists of a horizon of references and indeterminacies open for interpretation.

Also Ricoer's (1984) three-fold notion of mimesis identifies art (in his case also literature) as a transformational process. Mimesis1 is "pre-figuration" and alludes to the artist and readers' cultural and personal understanding as prerequisites for the encounter with an artwork. Mimesis2 is the configuration of the presented art piece, in Iser's terms the unity of selection and combination in the realm of the fictitious as-if. Mimesis3 is reconfiguration, and designates a transformed understanding and integration of mimesis2 into actual lived experience. Ricoeur sees the artwork as a mediator between one's conception of reality and an altered conception of reality.

Both Iser's notion of fiction and Ricoeur's three-fold mimesis stem from the hermeneutic tradition and describe a semiotic enterprise, which, at first glance, does not seem appropriate for my investigation. Nevertheless, the structural aspects of those notions can be applied to my subject matter, art and science projects, with one significant change. Iser's and Ricoeur's exclusively semiotic understanding of fiction is supplemented by an ontological understanding of transformational and creational fiction. Mimesis2 and mimesis3 collapse into the emergence of a transformed reality that is no longer result of interpretation (reconfiguration) but emergence. What is at stake here is the creation of physical and social realities through the semiotic process of fictionalisation.

The semiotic process of fictionalisation bears a similarity with P. Levy's (1998) characterisation of the relationship between the virtual and the actual. My notion of fictionalization nevertheless entails the double process of virtualisation of the actual and actualisation of the virtual. The virtual is not a stable modality but rather a "plane of immanence" (Deleuze 2001); it immediately elicits new actualisations, be it in form of imaginary realities, social realities or palpable realities. In his piece *Genesis* (1999), E. Kac transformed a passage of the Genesis chapter into DNA code, which was then incorporated into bacteria. SymbioticA is engineering novel live tissue. Blast Theory is heavily involved in research projects, e.g. constructing social realities using semiotic network machines like smart phones, GPS and the Internet.

IV CREATION OF BELIEVE

These processes of realization through fictionalization establish performative domains of engagement for both the artist and the art participant. Even though fictionalisation processes in art/science projects commence with *a priori* suspension of disbelief, they do end up with *create-belief*, so my hypothesis goes, in contrast to *make-believe* or *suspension of disbelief*, which needs to pinpoint and communicate the existence of a boundary separating different intentional realms.

The etymology of "belief" is found in *ga-laubon* "dear, esteemed" and means since the 16c. "mental acceptance of something as true" (Online Etymology Dictionary). I am not interested in "belief" demanded by religious or other doctrines, but in the *creation of believing* as a result of actions. Schechner's account of *actuals*, a term coined by A. Kaprow, seems to be a good starting point. At the core of his description lies the notion of efficacy [4]. *Actuals* are

efficacious in that they go beyond metaphoric and symbolic representations (without dismissing them). Due to the enactment of signs, the refereed is contained in or rather forms part of these signs. The refereed is present in form of a transforming power. This is the legacy of animism.

The anthropologist A. Gell (1998) writes about agency through art. In his view, art is not a purposeless endeavour, but is soaked with transmission of intention. The artwork is seen as an index (artefact) that is connected to a prototype (the refereed) by abduction. His notion of abduction is not merely a semiotic inference but a realization of the prototype's ascribed forces and powers through "likeness". Gell differentiates between agent and patient. The artist is often seen as agent, because s/he creates the artefact while the recipient is seen as the patient. But every one of those four implied entities (artist, recipient, prototype, index) can be either agent or patient; even the index can be the agent, e.g. in realistic art.

In the case of art/science projects, the index and the prototype conflate, or better, elicit an artificial reality. But the emergent realities are not fictitious any longer, because they are self-generating processes and occurrences. These projects are not analytical, reductionist, but basically *poietic*, they are dependent on a believing in a prospective and scientifically framed, yet ultimately undeterminable emergence. The discrete "analytical" units of science are selected and re-combined in novel assemblies (Latour 1999), aiming at the emergence of new entities, be it in form of robots, AI, or otherwise intelligent programs or social networks and systems. It is not this paper's intent to examine the categorical characteristics of emergence related to art/science-projects. There already exists a huge body of texts. Ultimately, it depends on each project in question.

This paper investigates the notion of *believing* in relation to emergence. Since the emergent realities cannot be predetermined, but only prepared for, the scientist/artist will develop an attitude of believing in prospective creations. This kind of *create-believe* differs from both the dogmatic religious belief and the *make-believe* of representational art. In the former case, belief is demanded for, in the later case, *believe* is voluntarily and transitorily established on the basis of disbelief. The emergent *believing* in art/science projects is, on the other hand, an inherent aspect of yet not determined processes.

This repudiates at first a simple animistic, metaphysical connotation of the concept of belief (and faith); instead it can be imagined as procedural force vectors yielded by firstly the formation of plausible hypotheses, and secondly the acknowledgement that these processes ultimately are self-constituent. Art/science-projects bring about a *"believing"* in the possible emergence of transformed and novel realities.

V CONCLUSION

The double logic of artificial but *actual* emergent realities of art/science-projects seems to be a paradox. On the one side, they are based on fictionalisation as an essentially semiotic engagement, on the other side, they seem to surpass the conceptuality of semiotics by eliciting palpable and first of all efficacious realities.

The hypothetical character of methodological aspects of art/science-projects seems to enforce *create-believe*, since these projects are dealing with the mere possibility spaces that cannot be deduced only prepared for. The question is whether this *create-believe* merely is an epiphenomenon or whether *create-believe* has a formative effect on the experiments' outcome itself. If we consider emergence as various interrelated processes on different levels within a force field (Bickhard, Campbell 2000), there is nothing that contradicts the latter view. This would bring it in collision with the most foundational bedrocks of science and modernity. If the notion of *create-believe* is acceptable, could there be traced an incipient paradigm shift which transcends modernity – a kind of reversed or maybe augmented modernity?

NOTES

1) My own university, Aalborg University, hired me (a former artist, now working as researcher within aesthetics), as a staff member of the engineering department.

2) Nevertheless, the art world has until now succeeded in protecting art as a conceptually confined space of fictitious expression thereby sustaining the distinction between art and science. Many avant-garde projects are/were working at and with the distinction thus paradoxically enforcing the divide in the long run, as the many exhibitions of modern art prove.

3) see also Patricia Leavy's book Method meets Art (2009)

4) Schechner identifies five characteristics of actuals heavily relying on anthropological research on rituals: 1) actuals are processes – "something happens here and now" (Schechner 1988), where 2) space is used very concretely; 3) they are consequential and irrevocable acts which surpass merely symbolic actions; 4) they entail a moment of contest, where something relevant is at stake that goes beyond modern conceptions of play and game; and 5) this contest brings about a significant change in the participants.

BIBLIOGRAPHY:

BICKHARD, Mark; CAMPBELL, Donald. 2000. "Emergence" in Andersen, Peter et al (ed.). Downward Causation. Aarhus: Aarhus University Press

COLERIDGE, Samuel Taylor. 2004. Biographia Literaria. http://www.gutenberg.org: Project Gutenberg

DELEUZE, Gille. 2001. Pure Immanence: Essays on a life (ed. John Rajchman trans. Anne Boymen). New York: Zone Books.

Gell, Alfred. 1998. Art and Agency. Oxford: Oxford University Press

ISER, Wolfgang, 1993. Das Fiktive und das Imaginäre. Frankfurt a. M.: Suhrkamp

LATOUR, Bruno. 1999. Pandora's Hope. Cambridge, London: Harvard University Press

LEAVY, Patricia. 2009. Method meets Art. New York, London: The Guildford Press

LÉVY, Pierre. 1998. Becoming Virtual: Reality in the Digital Age. New York, London: Plenum

RICOEUR, Paul. 1984. Time and Narrative. Chicago: The University of Chicago Press

SCHECHNER, Richard. 2002. Performance Studies London, New York: Routlegde

SCHECHNER, Richard. 1987. Between Theatre and Anthropology. Philadelphia: University of Pennsylvania Press

Maria Luiza Fragoso

SCHOOL OF FINE ARTS – EBA
FEDERAL UNIVERSITY OF RIO DE JANEIRO, BRASIL

ART, TECHNOLOGY AND NATIVE TRADITIONAL CULTURES – Transcultural Experiences in Multimedia

This research is organized in two main streams that converge to the conception of projects of interactive multimedia computer artistic installations. One of the flowing streams is the study of specific rituals or practices in native Brazilian indigenous traditional cultures, in which unique stages of sensibility and consciousness are experienced. In this case, our research approaches symbolic, material and immaterial production, aspects in anthropology and health care, religious and philosophical recognition and conception of cosmogonic beliefs. The second flowing stream is the study of software and hardware interfaces for the construction of the installations environments. All of it within the field of contemporary multimedia/computer art.

In 2004, the project "NET – Brazilian Net of Graduate Study Institutions with Projects & Programs for Indigenous Nations" (*REDE – Rede Brasileira de Instituições de Ensino Superior com Projetos e Programas para Povos Indígenas*) began under the co-ordination of professor Hellen Cristina de Souza (State University of Mato Grosso) and myself (at the time professor at the University of Brasília). The main goal of the project was to establish a net between institutions and native indigenous students to stimulate opportunity, admission and permanency of these students in an increasing number of universities all over Brazil. Still today, Brazilian government has no official policy that protects or guarantees native students admission to professional studies other than teaching specializations (PROLIND) [1]. At that time, a total of 17 universities were applying different systems of admission for the students without a national program or any interchange, including the University of Brasília. With the project REDE we created the website hosted at http://redesestudantesindigenas.unemat.br/htm/home.php and fostered national and regional meetings, opened new spaces for discussion and found initiatives which led us to our present activities.

In 2008 we began the project Health Care Practice at Indigenous Villages (*A Saúde que se faz na Aldeia*) in cooperation with Josinaldo da Silva Atikum, an indigenous student from the Atikum Nation, accepted to the School of Medicine at the University of Brasília. In Atikum tradition the ritual called *Toré*, shared by different nations located at the northeast region of Brazil, is a central activity in healing processes and became our object of study. For Josinaldo, this cooperation is a significant step towards a dialog between traditional healing processes and contemporary official medical practices. He fights for the recognition of ancient health care practices and intends to find ways to introduce his nation's culture in academic scientific research to promote transcultural knowledge. The ritual of *Toré* makes use of a drink prepared with a plant called *Jurema*. Similar to other beverages that provoke an altered state of consciousness, this drink also called *Catucá* is used by the shamans to contact the ancestrals called *the enchanted by light*. Our field research involved visiting three nations: Atikun, Pankará and Potiguara. In all three nations shamans practice *Toré* and prepare the *Catucá*. We were allowed to take pictures, tape, make interviews, and share some moments of the rituals. In August 2010 we returned to these nations a DVD with edited material about their traditional healing ritual.

A second flowing stream arises from the opportunities that the project REDE provided. We extended our activities from a multimedia documentation to a symbolic production that proposes artistic experiences. The work began by building processes which integrate photographs, video, sound recordings and animations with computer interactive multimedia objects or installations, all of which pointing to the idea of expressing a sensation of multi, but totallly unique, space (reality). This proposition was transported from the context of unity and convergence experienced during rituals of *Toré*. Our first projects examined the possibility of combining captured data into a unique interactive system opened to human-computer interaction (HCI) with installed objects.

Pure Data was our first software choice and now Processing is being used to integrate sound and images in animated environments. More than meshing images and sounds, our multimedia interactive computer installations may conceal natural, physical and/or artificial systems that are used to build interfaces that propose and express artistic creations. We are investigating digital interfaces, robotics and human prosthesis that can be used for experimentations that appoint to extend human actions from physical to symbolic fields. Different from classic human-computer interaction (HCI), our intention is to override direct results from these interactions, in the sense that immediate outputs only represent a record, data, and not the dynamic essence that led to these records. Outputs should expand the space of interaction, stimulate thought processes and symbolic awareness. Complexity lies within these thought processes (logos) and the phenomenon of *aisthesis*. Real transformation occurs with the individual's consciousness expansion, and we believe it still can't be shown or expressed on or by the computer multimedia interactive systems. This situation may change if the computer systems, softwares and hardwares, are able to digitalize and

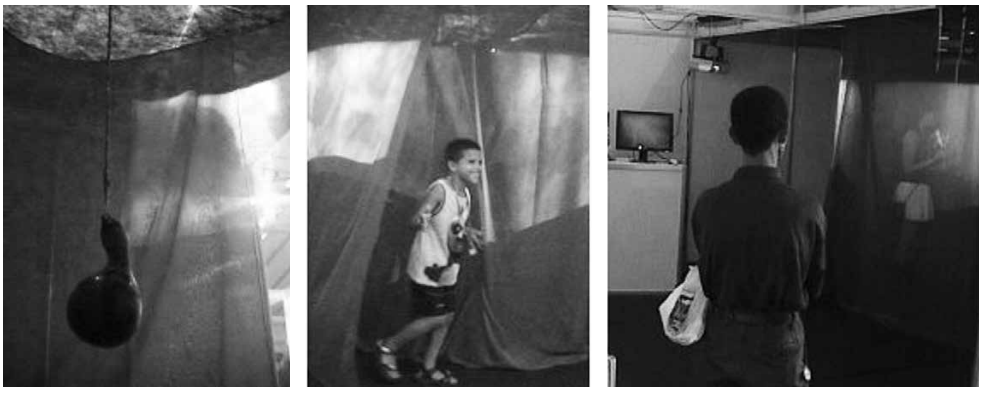


FIG. 1: *UmAtikum at National Week of Science and Technology (Brasília), 2008*

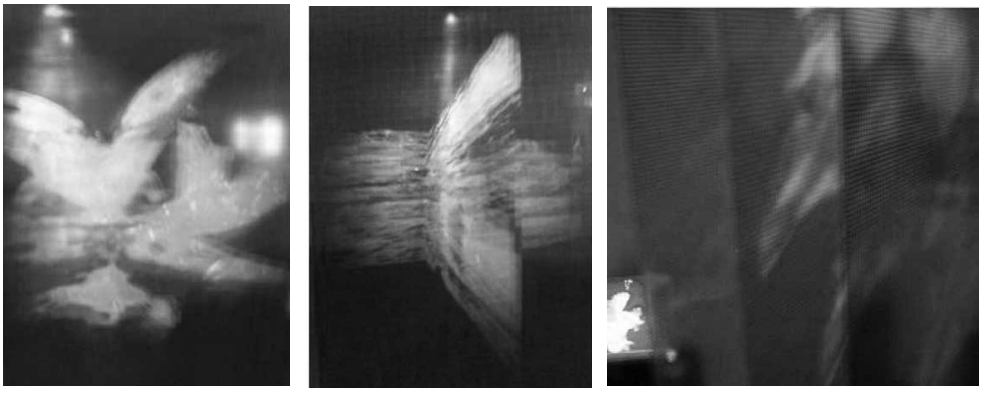


FIG. 2: *Toante em Cibermotion at National Republics Museum (Brasília), 2009*

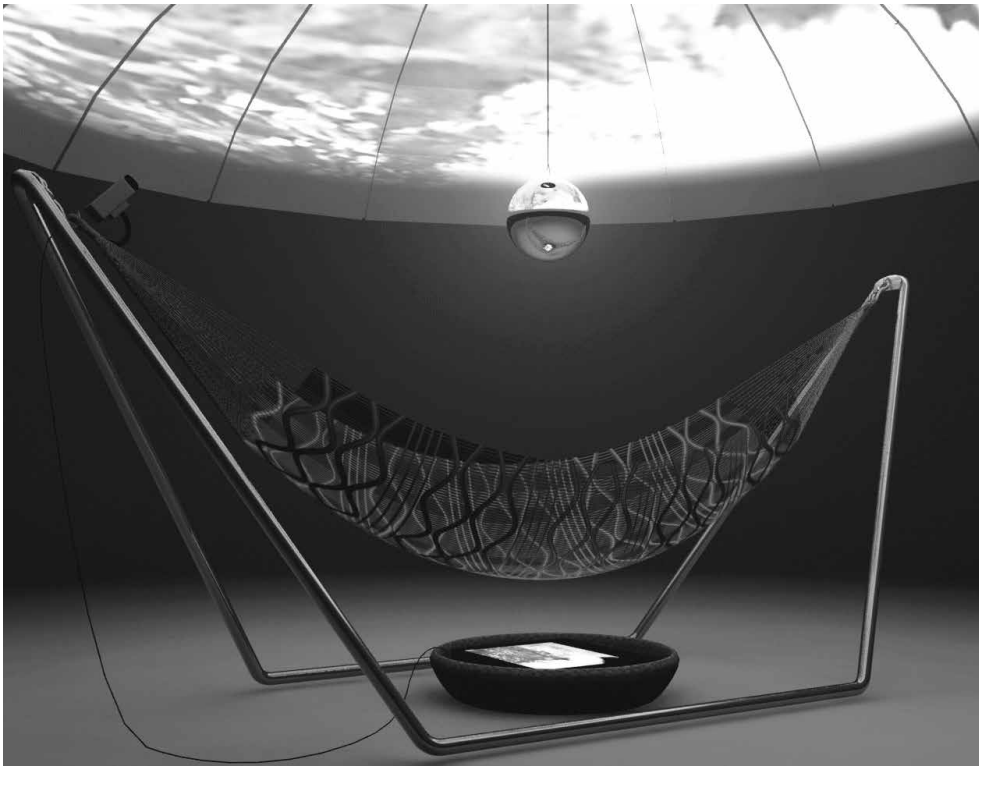


FIG. 3*: Embalaeu – 3D simulation of prototype*

process more and more information to a stage of such complexity that systems may process and produce under the realm of the symbolic, the subjective, as in art.

The works *UmAtikum*, *Toante em Cibermotion*, and *EmbalaEu* are computer multimedia interactive installations, artistic contemporary works that explore the potential of technological environments to establish a transcultural dialog. According to Gilles Deleuze and Felix Guatarri (1994), there are no simple concepts: all concepts are composed of multiplicities and should be understood as articulations, cuts (editions) and arrangements (superpositions). These three works were conceived under the principles of arrangements and specific editions in order to promote transcultural investigations. We are also concerned with the emergence of new concepts in art and multimedia in research practice.

UmAtikum (2008) **(FIG. 1)** was created by Jackson M. Vieira, Anibal Alexandre Lima Diniz, Josinaldo da Silva Atikum, Maria Luiza Fragoso, Shirley Fiuza and Victor Hugo S. Valentim. An expedition to Atikum and Pankará villages was organize by Josinaldo. Field research activities were divided in interviews with tribal chiefs and shamans, video, photo and sound registration of rituals and cultural activities. This material was edited with two purposes: creating multimedia interactive artistic installations and a documentary under the title "Health Care Practice at Indigenous Villages" (*A Saúde que se faz na Aldeia*). *UmAtikum* was the first art work resulting from this experience. The system is composed of edited video images of *Toré*; programming in Pure Data for real time sound interactions; production of a physical environment with translucent fabrics; construction of a rattle made of dry gourd, called *maracá*, with a microphone inside; the assembly of all these elements into a situation that invites the public to enter a circular environment (cave simulation) and play the *maracá* with the Atikum people during the healing ritual of *Toré*. It was shown in three occasions, but the most significant experience was during the National Week of Science and Technology (Brasília), where the exhibit location was poor but the interaction with the public was excellent. Thousands of students visited the exhibition space and we believe that hundreds were inside our installation.

Toante in Cibermotion (2009) **(FIG. 2)** was created by Adriana Lopes, Anibal Alexandre Lima Diniz, Dennys Mitihey Ando, Jean-Marc Billard, Jackson M. Vieira, Josinaldo da Silva Atikum, Maria Luiza Fragoso, Shirley Fiuza and Victor Hugo S. Valentim. This second experience explores the idea of multilayer image construction (also a reference to multilayer cosmology) by using photo motion animations projected over three acrylic panels, each printed with R (red) G (green) B (blue) textures, provoking a multispacial sensation. The public can interact with the animation projected with simple presence detection, changing its speed, rotation's direction, scale, etc., which increases the effects of deepened space. It was shown on two occasions and we consider this result a prototype for a future installation. From this experiment our investigation merged to Augmented Reality and ChomaDepht possibilities. The intention is to trigger the idea of parallel realities, perceived with or without prosthesis. Since we will not offer to the public the catucá drink the multimedia system stands as visual interface to parallel realities.

EmbalaEu (2010), **(FIG. 3)** still in construction, places a hammock under a dome with projected images and invites the public to relax, to listen, and by the smooth swing of the hammock feel the presence of the *encantados de luz* (beings enchanted by light). According to Atikum people, these beings are known to exist as much as any "living" human being. They integrate their space of reality. Similar to the *Hekuras*, from Yanomami's culture, they belong to a different sage of the cosmological system and they act in a different state of consciousness. To feel them we need to acquire a special sensibility. Metaphorically, *EmbalaEu*, which means "rock me" (as in a cradle), applies the concept of augmented reality to a specific environment where different sensors are disposed in order to bring to our visual universe of symbolic representations the presence of *encantados de luz*. We would like to expand the field of perception beyond visual possibilities. Currently developing this project are Dennys Mitihey Ando, Leonardo Galvão, Josinaldo da Silva Atikum, Maria Luiza Fragoso, Ricardo Cortaz, and Sully Ceccopieri da Rocha at the University of Rio de Janeiro.

We consider this research at its first stages. During the last six years our work was ruled by the need to understand and experience aspects of native traditional cultures from Brazil. Only in 2008 we began the process of constructing the environments for the installations. The stage of development is still focused on handling aspects of programming for simple interaction with primary sources such as photographs, videos and animations. We believe that the essence of the research, based on the traditional native cultures, is the need to share the notion that reality converges into one common nature, a single ontology, and that this notion can be experienced within different stages of consciousness all accessed on a daily basis, with or without the influence of special technology (natural or artificial). This essence led us to investigate these experiences and to discover ways to express them, and not the other way around. Producing technology is not our main goal, but exploring computer systems and interfaces became an efficient and necessary procedure. Art is our field of knowledge but new paradigms are emerging and need to be reinforced by those who are working to re-signify symbolic production in contemporary art. We see ourselves as mediators, that reveal processes and create conditions for artistic manifestations, mediators of events. Our work results from connecting ideas with procedures based on the need to explore hybrid spaces in contemporary sciences, always considering art as our foreground for expansion.

NOTES

1) PROLIND is the official Brazilian government program for teacher training at undergraduate level to attend the needs of basic education at indigenous villages.
http://portal.mec.gov.br/index.php?option=com_content&view=article&id=12258&Itemid=817

REFERENCES

ASCOTT, R. 1999, Reframing Consciousness, Art mind and technology. Intellect Books, Exeter.

COUCHOT, E. 2003, A tecnologia na arte. Da fotografia á realidade virtual, Sandra Rey (transl.). UFRGS Editora, Porto Alegre.

DELEUZE, G & GUATARRI, F 1994, What is Philosophy? Columbia University Press, New York.

FLUSSER, V. 2002, Writtings. The University of Minnesota Press, Minnesota.

FRAGOSO, M.L. 2003, Experimentações Multimídia em Arte Contemporânea e Internet. PhD thesis, State University of Campinas, São Paulo.

Martha Gabriel

UNIVERSITY OF SÃO PAULO, BRAZIL
martha@martha.com.br
www.martha.com.br
@marthagabriel

MOBILE TAGGING AS TOOL FOR MIXED REALITIES

INTRODUCTION

Mixed Reality (or MR) refers to the fusion of the physical and virtual worlds to produce new environments and visualizations where physical and digital objects co-exist and interact in real time. On the other hand, mobile tagging is the process of reading a 2D barcode using a mobile device camera. Allowing the encryption of URLs in the barcodes, the mobile tagging can add a digital and/or online layer to any physical object, thus providing several levels of mixed realities related to that object.

The uses of these levels of mixed realities have applications in several areas going from medicine and engineering to arts. Although mixed realities technologies have existed for decades, they were expensive and usually confined in labs. Nowadays mobile devices (cellphones, smartphones, PDAs) can be used as tools for mixed realities and due to their pervasiveness and low costs, their potentiality for increasing the dissemination of mixed realities is enormous and can be leveraged by mobile tagging as described next.

MIXED REALITY

According to the Virtuality Continuum concept (MILGRAM, 1994), the mixed reality is anywhere between the Virtual Environment and the Real Environment, comprising stages of reality, augmented reality, augmented virtuality and virtuality, as can be seen in the **FIGURE 1**.

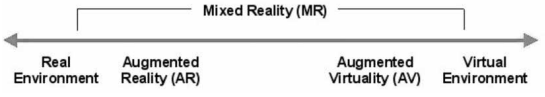


FIG. 1: ***Virtuality Continuum*** *(Source: Wikipedia, 2009)*

Analyzing the Virtuality Continuum spectrum, the Real Environment would comprise our "pure" state of reality, which would be the "true" reality. Since the human beings' relationship with the world is always mediated by their bodies, knowledge, technology, etc., and each one of us has different kinds of these instruments, it's suggested that we cannot experience the "pure" state of reality. On the other hand, when we consider the other side of the Virtuality Continuum spectrum, the Virtual Environment would be the "pure" state of virtuality. The "pure" state of virtuality would require that our physical reality didn't interfere in the virtual experience. It's suggested, too, that this "pure" state of virtuality can be reached only in fiction, like in the movie *The Matrix* (Warner, 1999). In this sense, what we experience most are the mixed realities which can have more weight in the virtual realms, therefore being called "augmented virtuality", or can have more weight in the physical world and be an "augmented reality".

In general, we could say that when we bring the virtual layer of the mixed reality to the physical environment, to improve the experience here, it is an augmented reality. When we bring the physical layer of the mixed reality to the virtual environment it is an augmented virtuality. When both layers – physical and virtual – act simultaneously with the same weight, in order to improve the experience in both sides, we could say that it is a hybrid reality that depends on both.

Practical examples of Virtual Reality are the immersive caves, where the interactor dives into the virtual environment, like the VirtualSphere (**FIG. 2)**.

An example of augmented virtuality happens in the art work "DE PROXÉMICA", shown in the **FIGURE 3**, where the actions of people in the physical world interfere with the narrative and elements in the digital installation.

In the realm of augmented reality, a very practical example is the "Nearest Tube", an iPhone application that helps to find the nearest subway station **(FIG. 4)**. Some other examples of augmented realities applications in several areas are:

- MINI Cabrio – car advertisement (YouTube, 2009-2).
- SPOILER – game (YouTube, 2009-1).
- BMW – engine maintenance (YouTube, 2009).
- Arcane Technologies – educational and military applications (Arcane, 2009).

Several kinds of devices and technologies can be used as tools for mixed realities, such as glasses, gloves, monitors, computers, cameras and mobile devices (PDAs and cell phones). Nowadays, the increase in interest particularly in augmented reality is due to the fact that unlike in the past, any mobile device and webcam can be used as hardware for augmented reality processes. The pervasive nature of the mobile devices and the decrease in their price, have increased their enormous potentiality for the dissemination of mixed realities, which can be leveraged by mobile tagging, as will be described next.

MOBILE TAGGING

Mobile tags are 2D-barcodes that can be scanned by mobile devices in order to decode the information kept in the barcode.

There are many types of 2D-barcode (tag) and it is possible to encrypt many kinds of data into them, such as: a) simple texts and numbers; b) contact info (which can be read by most digital and mobile contact books); c) SMS messages and; d) URLs, or web links **(SEE FIG. 5)**.

However, regarding mobile tagging, the most common and more powerful encrypted information is URLs because when you read an URL from the image (2D barcode –

mobile tag), that image becomes a virtual button to the web, a link to the digital world. Therefore, the mobile tagging allows that any physical object gets a digital layer of information by encrypting an URL in the tag. The process of mobile tagging can be seen in the **FIGURE 5**.

The most used patterns of 2D-barcodes for Mobile Tagging are QR Code (Quick Response Code) and Datamatrix. While conventional bar codes **(FIGURE 6)** are capable of storing a maximum of approximately 20 digits, a QR Code **(FIGURE 7)** is capable of handling up to thousand characters and all types of data, such as numeric and alphabetic characters, Kanji, Kana, Hiragana, symbols, binary, and control codes (Denso-Wave, 2009). According to (Denso-Wave, 2009), the capacity of storage of a QR Code is:

QR CODE MAXIMUM DATA CAPACITY

Numeric only	7,089 characters
Alphanumeric	4,296 characters
Binary (8 bits)	2,953 bytes
Kanji, full-width Kana	1,817 characters

Besides QR Code and Datamatrix, other mobile tags that are interesting to mention are:

– Microsoft tag – they have another pattern of encryption and use colors too.
– Bokode – a new prototype for mobile tagging presented by the MIT at Siggraph 2009.

Although mobile tags are still a novelty for most countries, they are starting to spread as the 3G mobile technology becomes available around the world. The use of QR Codes is already very common and popular in Japan, while Datamatrix is more used in Europe, especially in the UK. Most new models of mobile devices come with a mobile tag reader (QR Code and Datamatrix). Older versions of devices can install a QR Code reader, such as i-nigma (www.i-nigma.com), which enables QR code scanning.

Since the mobile tagging brings a digital/virtual layer to virtually any physical object, person, place or any component of the physical environment, we could say that the mobile tagging is a way of creating augmented realities.

A very interesting use of mobile tagging as mixed reality is the Semapedia.org (www.semapedia.org) that stimulates the use of QR Codes in physical places that are present in the Wikipedia, mapping them. In this sense, each place is provided with a new layer of dynamic information coming from the digital online world, thus increasing their use.

MOBILE TAGGING IN ART

There are several interesting examples of exploring mobile tags in Art, increasing the possibilities for interaction, crossmedia and poetics. We will present two artworks using QR Codes in electronic interactive arts.

The first example is the "SENSITIVE ROSE" (Gabriel, 2008) artwork, which builds an interactive compass rose formed by QR Codes that navigates into people's desires **(FIGURE 8)**. The work is a big projection (3 x 3 meters) and all the interactions happen through the projection by scanning the dynamic QR Codes for participating with a mobile device. All the effects of the interactions are shown on the projection too. The work was launched in November

FIG. 2: *Image of VirtuSphere, with the QR Code link to its demo video*
(Source: http://www.youtube.com/watch?v=qTnnJR-hS7k)

FIG. 3: *Image of the art installation "DE PROXÉMICA" with the QR Code link to its demo video*
(Source: http://www.youtube.com/watch?v=qTnnJR-hS7k)

FIG. 4: *Image of the demo vídeo of the iPhone app "Nearest Tube". The vídeo can be accessed via the QR Code link in the image*
(Source: http://www.youtube.com/watch?v=U2uH-jrsSxs)

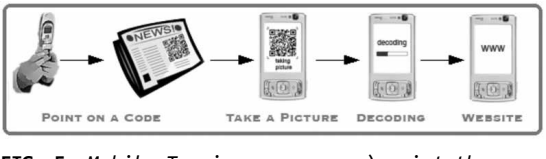


FIG. 5: *Mobile Tagging process: a) point the device camera to the mobile tag; b) the mobile tag reader decodes the information; c) if the information is a URL, you can then access the web.* *(Source: Mobile Tagging Blog, 2007)*

2008 and has been exhibited at Nokia Trends São Paulo 2008, ePoetry 2009, Sesc Araraquara 2009, Florence Biennale 2009 (awarded), Technarte 2010 (invited) among others, and has already received thousands of interactions.

Another interesting artwork that uses QR Codes is the "Suite 4 Mobile Tags" (Beiguelman, 2009) which proposes an exercise of random and anonymous collective musical composition. By pointing a phone with a QR-reader to a display **(FIGURE 10)**, participants play a ringtone. The result is a sudden and temporary suite that plays with hi and low tech, the portability, the confusion between public and private, music and noise.

CONCLUSION

Since the mobile tags are simple tags that can be placed in virtually any physical object or person, added to the facts that: a) the cell phones with camera have become a very inexpensive and pervasive device, and, b) any person can create mobile tags for free on the web, we can say that the mobile tagging process is one of the easiest, cheapest and simplest ways of creating mixed realities.

The use of mobile tagging is limitless. It can range from expanding the information on packages, bus stop routes, museum objects, to art, increasing the experience in virtually any field. They work like physical links to the web, allowing virtually anything to be part of an expanded mixed reality environment.

We believe that the high cost of mobile broadband around the world is the most determinant limitation for the popularization of the use of mobile tagging. As the mobile data connection costs diminish we will probably see a raise in the use of mobile tagging, like what happened with the QR Codes in Japan.

REFERENCES

ARCANE TECHNOLOGIES (2009). Demos. [http://www.arcane-technologies.com/?page_id=19] accessed on Jan 15 2009.

BEIGUELMAN, Giselle & Fleury, Mauricio (2009). Suite 4 Mobile Tags. [http://www.desvirtual.com/projects/suite-4-mobile-tags/] accessed on May 4 2009.

GABRIEL, Martha C. C. (2008). SENSITIVE ROSE. [www.sensitiverose.com] accessed on Jan 15 2009.

MILGRAM, P. & KISHINO, F. (1994). A Taxonomy of Mixed Reality Visual Displays. IEICE Transactions on Information Systems. Vol. E77-D, No. 12. Dec 1994.

Mobile Tagging Blog (2007). What is Mobile Tagging. [http://mobile-tagging.blogspot.com/2007/09/what-is-mobile-tagging.html] accessed on Jan 15 2009.

YouTube (2009). BMW augmented reality. [http://www.youtube.com/watch?v=P9KPJlA5yds] accessed on Jan 15 2009.

YouTube (2009-1). Cube Speedrun *SPOILER*. [http://www.youtube.com/watch?v=dsb76pva4s4] accessed on Jan 15 2009.

YouTube (2009-2). MINI Cabrio: AugmenAugmented Reality Ad. [http://www.youtube.com/watch?v=HtYjHNeR_iM] accessed on Jan 15 2009.

Wikipedia (2009). Mixed Reality. [http://en.wikipedia.org/wiki/Mixed_reality] accessed on Jan 15 2009.

FIG. 6: *Conventional barcode storing the number 123456*

FIG. 7: *QR Code storing the URL "http://www.martha.com.br/"*

FIG. 8: *Screenshot of the artwork "Sensitive Rose"* *(Source: Martha Gabriel)*

FIG. 10*: Installation Suite 4 Mobile Tags*
(Source: http://farm4.static.flickr.com/3367/3445893408_9fd3bf4d8f.jpg?v=0)

Luis Gustavo Bueno Geraldo

TEACHER OF TECHNOLOGY COLLEGE OF SÃO PAULO (FATEC-SP), BRAZIL
luisgbg@gmail.com

CYBERFLANEUR – BETWEEN THE VIRTUAL AND THE REAL WORLDS

INTRODUCTION

The concept of the cyberflaneur was created during the last decade of the past century by different new media researchers around the world. It has been described with different terms, as electronic *flâneur*, net *flâneur*, digital *flâneur*, virtual *flâneur* and others. In this paper, for reasons of simplicity, the term cyberflaneur will be adopted to designate the concept, despite the differences that may exist between each one of them. Here, we are interested in something that they all have in common: the connection between the concept of cyberspace and the figure of the *flâneur*.

The *flâneur*, the solitaire stroller of the great cities, which has been described since the nineteenth century by authors like the French poet Charles Baudelaire and the German philosopher Walter Benjamin, was known as a male individual that used to walk through the city space with apparently no defined objectives. His hometown was Paris, the place that inspired most of the *flâneur* descriptions, even though similar figures appeared in other European cities, such as London and Berlin. The *flâneur* appeared during a time of great transformation in the urban configuration of Paris. He was the observer of these changing phenomena – his object of study was modernity itself (Buck-Morss 2002). Besides being portrayed only as an observer, the *flâneur* was sometimes identified as a producer – a writer, a painter, a journalist. Production was a way of sharing his experiences and his particular way of looking to the modern city.

The *flâneur* as a historical figure had his existence tied to the nineteenth century. His heyday was around the mid of the century, in the epoch of the Second Empire. After this period, with the changes promoted by Baron Haussmann, which increased the traffic speed as well as the commercialization, there was no longer space for the slow movement of the *flâneur*. Nevertheless, the *flâneur* walked through several social and cultural studies during the twentieth century, as a conceptual figure used to describe the early transformations of modern societies.

The cyberflaneur concept, as the original *flâneur*, appeared in a context of huge transformations, promoted this time by the emerging and the popularization of the new media. During the nineties, the Internet was accessible for private and commercial use. It was an emerging space for a new type of human interactions, playing a similar role to what the modern cities represented in the nineteenth century. For the proposers of the concept, the cyberflaneur was meant to be a type of *flâneur* that navigates in the cyberspace clicking with no defined objectives, in a behavior comparable to the *flâneur* of the streets.

In this paper we intend to reflect on this separation between the virtual reality, in which the cyberflaneur is described, and the city context, the home of the original *flâneur*. Our aim here is to show that in the emerging context of hybrid realities, this gap may be understood in a more relative way. We will reflect on two different artistic experiences that demonstrate the crossing between these two realities. However, before analyzing these works, the following item will bring a brief overview of the cyberflaneur concept and its relation to the original *flâneur* and to cyberspace.

CYBERFLANEUR

The cyberflaneur appears in printed and online texts in the beginning of the nineties. One of the first authors to use the concept was the architect and researcher William J. Mitchell, from the Massachusetts Institute of Technology (MIT). In the beginning of his book *City of Bits*, published in 1995 in both printed and online versions, he designates himself as an electronic *flâneur*, in a fragment that was quoted in many later texts: "My name is wjm@mit.edu (though I have many aliases), and I am an electronic *flâneur*. I hang out on the network" (Mitchell, 1995, p. 7). Mitchell associates the virtual *flânerie* to actions like checking the email and accessing news websites. However, he uses the concept only for the introduction of his book, and he does not develop it further.

Other authors, as Lucy Kimbell from the United Kingdom and Steven Goldate from Australia reinforce the analogy between the cyberspace and the city. In their texts, both from 1998, they simply equate the online sphere and the city space to talk about virtual *flânerie*. Their texts portray the web as a completely new medium that somehow replaces the urban sphere, and in this replacement process, the cyberflaneur is presented as a kind of substitute for the old *flâneur* of the streets:

> *"What the city and the street were to the* **Flâneur,** *the Internet and the Superhighway have become to the Cyberflâneur." (Goldate, 1998)*

> *"The same evanescent character who wandered through the Parisian boulevards of the French poet Charles Baudelaire, and from there can be glimpsed sauntering across the pages of many a critical text, now has a new space through which to roam, the virtual chat rooms, meeting places and cafes hosted by the Internet. Baudelaire's flâneur immersed himself in what was only then becoming recognizable as a new sort of space, the modern city. The postmodern flâneur has at her disposal the new, nonphysical City of Bits, or cities, constituted through*

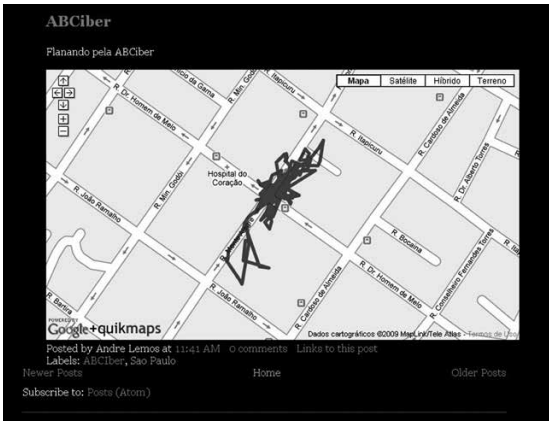


FIG. 1: *Screenshot image from the "Ciberflânerie" weblog*

FIG. 2: *"Blue girl", from the Homecammer series (2006)*

> *the imagination and programming skills of users of the global network of networks of computers known as the Internet." (Kimbell, 1998)*

The lack of mediation in these constructions was criticized by the German researcher Maren Hartmann, in her book *Technologies and utopias: the cyberflaneur and the experience of 'being online'* (2004). Hartmann made a deep study about the metaphors created to describe different types of web users, giving special attention to the cyberflaneur. She claims that the way the concept was used by authors as Kimbell, Goldate and Mitchell makes a superficial relation to the original *flâneur* and his context. For Hartmann, one important characteristic that is not explored in most of the characterizations of the cyberflaneur is the detachment of the *flâneur* from the public sphere. This detachment was responsible for his distinct point of view, but at the same time it put him in a situation of ambiguity, because it created a distance from the phenomenon he was trying to observe. The *flâneur* was simultaneously part ofand apart from the crowd.

For the *flâneur*, one way to resolve this situation was the production of cultural objects, as poems, drawings and paintings that could communicate his experiences and share them with the people he used to observe. Hartmann proposes that this production side of the original *flâneur* is vital for the relevance of the cyberflaneur concept, because it makes him (or her) visible. The invisibility of the urban *flâneur* was relative, because in the urban space one could at least notice his existence. On the other hand, in cyberspace the user may become completely invisible.

We do agree with Hartmann on this need of output in the cyberflaneur concept. However, may this output process be restricted to the web sphere? Now, we are going to analyse some experiences that show that it is possible to imagine the cyberflaneur concept as crossing the borders of virtual and physical spaces.

CIBERFLÂNERIE WEBLOG

The weblog "Ciberflânerie"[1] is a project made by the Brazilian researcher André Lemos that initiated in April 2008 and ended one year later. Even though there are no new posts since then, the blog can still be accessed today, as a memory of the project. The posts contain the registers of Lemos' pathways, made by foot, by bicycle and by car through several cities around the world. The pathways were mapped with the use of a GPS tracker and then the data were transmitted to the blog using Google Maps. The titles of the posts identify the name of the places visited, and usually there are no texts describing them. Several maps contain, besides the track of the pathways, images and videos produced by Lemos during the course, which were incorporated to the map in the relative position of where they were produced. **(FIG. 1)**

To map and to *flâner*, are actions that establish a relation of space appropriation, but in very distinct ways. The idea of mapping is related to a scientific and rational discourse (Fragoso, 2000). *Flânerie*, on the other hand, constitutes a very subjective movement, and for that reason it is perceptible only to the person that strolls. "Ciberflânerie" plays with these two ideas, and this playing makes the subjectivity of the *flâneur's* movement visible and public.

The interesting point of this project is that it is constructed initially from the physical reality with the use of digital process terminating in the virtual sphere of the weblog. So it allows a new way of looking at the relations that may exist between these realities. In the public space of Internet, his *flânerie* gains another dimension, through the work with technologies that are usually used to ordinate and not to compose.

HOMECAMMER

Homecammer (2006) is a series of images produced by the Canadian experimental photographer Cheryl Sourkes [2]. In this series, she works with images appropriated from public webcam sites. Sourkes captures the images and reworks them digitally. In the end of the process, she makes prints of the images in large scale, so that they can be exhibited in galleries. Homecammer was exhibited in the Peak Gallery in Toronto, Canada, in 2007.

Sourkes' navigation through these galleries goes far beyond simple voyeurism as it becomes a way for aesthetic production. Through the eye of the webcam, cyberspace becomes a connection space between places and people

physically distant from each other. As Cheryl Simons points out, Sourkes' work gets close to the relation between *flânerie* and photojournalism:

> *"In many ways, Sourkes' practice is akin to that of the classic modernist figure of the flâneur-as-street-photographer. Like Cartier-Bresson, Evans, Frank and Arbus before her, she remains alert for the 'decisive moment' watchful for the telling gestures and suggestive juxtapositions that compose the everyday dramas of digital life." (Simon, 2007)*

(FIG. 2) Through the use of webcam images, Sourkes approaches fragments of everyday realities, and turns them into memories through digital photography. Her work explores the boundaries between public and private spaces in the virtual network. In her work, the other is not only an object of study but also an acting subject, who participates in the creation of the work, since he or she is responsible for the environment, the framing, and the selection of what will be made public. In the exhibition space, the images generated by Sourkes call the viewer to confront this reality, which is intimate and distant at the same time.

FINAL CONSIDERATIONS

When the cyberflaneur concept was created it was promoted as a figure capable of dealing with the transformations brought by the insertion of the Internet in everyday life. A conceptual being that describes a particular attitude of navigation in the cyberspace, its auto control in the information chaos of the virtual sphere allowed it to discover unexpected meanings. However, as Hartmann (2005) pointed out, output is important for the relevance of the concept – without output, this ability of discovering new information that is in the essence of the concept of the cyberflaneur may become imperceptible for other users.

Nevertheless, when the concepts that deal with the idea of online *flânerie* were created in the nineties, they were built as a counterpoint to the original street *flânerie* – the online cyberflaneur appeared to be a substitute for the offline *flâneur*. But now, with the emerging of hybrid realities that promote the intercrossing between physical and digital instances, it seems possible to imagine the cyberflaneur conceptually as a figure whose experience is not restricted to the cyberspace. Today, almost two decades after the propose of the idea of cyberflanerie, we are able to visualize this intercrossing between virtual and physical spaces, perhaps because the Internet is not a new medium anymore, but a space for relationships that is part of everyday life, as the city was and continues to be.

NOTES

1) http://ciberflanerie.blogspot.com/
2) http://www.cherylsourkes.com/

REFERENCES

BAUDELAIRE, C., 1988. A modernidade de Baudelaire. São Paulo: Paz e Terra.

BENJAMIN, W., 1994. Obras Escolhidas, Vol III: Charles Baudelaire: um lírico no auge do capitalismo. São Paulo: Brasiliense.

BUCK-MORSS, S., 2002. Dialética do olhar. Belo Horizonte: UFMG

CASTELLS, M., 1999. A sociedade em rede – A era da informática: economia, sociedade e cultura. São Paulo: Paz e Terra.

FRAGOSO, S., 2000. Espaço, ciberespaço, hiperespaço. [Online]. Available at: http://www.midiasdigitais.org/categoria/todos-os-artigos/todos-os-artigos-por-autor/todos-os-artigos-suely-fragoso/ [accessed July 5 2009]

GOLDATE, S., 1998. The 'Cyberflâneur': spaces and places on the internet. [Online]. Available at: http://www.ceramicstoday.com/articles/050498.htm [accessed November 10 2007]

HARTMANN, M., 2004. Technologies and Utopias: The Cyberflaneur and the Experience of 'being Online'. Munich: Verlag Reinhard Fischer.

HAZAN, S., 2001. The virtual aura and the digital flâneur. [Online]. Available at: http://www.shazan.com/flâneur [accessed November 5 2007]

KIMBELL, L., 1998. Cyberspace and subjectivity: the MUD as the 'home' of the post-modern flâneur. [Online]. Available at: http://rhizome.org/discuss/view/28203/#1031 [accessed October 4 2007]

LEMOS, A., 2001. Ciber-flânerie. [Online]. Available at: http://www.andrelemos.info/artigos/ciberflanerie.pdf [accessed June 10 2010]

LÉVY, P. , 1999. Cibercultura. São Paulo: 34.

LOVINK, G., 1993. The media gesture of data dandysm. [Online]. Available at: http://www.ctheory.net/articles.aspx?id=136 [accessed May 10 2008]

MITCHELL, W. J., 1995. Ciy of bits. Cambridge: MIT Press.

MANOVICH, L., 2001. The language of new media. Cambridge: MIT Press

RIBEIRO, C., 2004. Do flâneur ao ciborg – teorias filosóficas do espaço. [Online]. Available at: http://www.eesc.usp.br/nomads/complexidade/pdf/ARTIGOS/FILE_2004.pdf [accessed October 17 2007]

SIMON, C., 2007. Loitering in cyberspace: Cheryl Sourkes' takes snapshots of the web's digital citizenry. [Online]. Available at: http://findarticles.com/p/articles/mi_hb6371/is_94/ai_n29365162/?tag=content;col1 [accessed May 10 2008]

TESTER, K. ed., 1994. The Flâneur. New York: Routledge

James K. Gimzewski

ART|SCI CENTER, CALIFORNIA NANOSYSTEMS INSTITUTE, UCLA, USA
IMÉRA THE AIX-MARSEILLE INSTITUTE FOR ADVANCED STUDY, MARSEILLE, FRANCE
INTERNATIONAL CENTER FOR MATERIALS NANOARCHITECTONICS (MANA)
NATIONAL INSTITUTE FOR MATERIALS SCIENCE (NIMS), TSUKUBA, JAPAN.

WHAT ART CAN DO FOR SCIENCE: LEARNING TO LEARN

When Erwin Schrödinger gave his Nobel Lecture he said: "As it was, one was faced with the difficult task of saving the soul of the old system, whose inspiration clearly held sway in this microcosm, while at the same time flattering it as it were into accepting the quantum conditions not as gross interference but as issuing from its own innermost essence." He was referring to paradoxes in the duality of matter and waves. I see a similar dichotomy in thinking about art and science in today's world. I refer to reestablishing connectionism between the two highest forms of human creativity: science and art. Why have they diverged into two intellectual forms as different as the wave and particle descriptions of nature? How do we connect them again – and why should we bother?

This human world is mediated by hierarchies of communication networks/technologies, increasingly so as we progress into this century. Many more new technologies will become commonplace in everyday life, such as dust sized smart RFID tags attached to everything imaginable from condoms to hot dogs. Medical data from distributed sensors, be they genomic, proteomic, heart rate, blood pressure, dopamine and adrenaline levels and even more personal information will be streamed real time into unseen databases. The acquisition and storage of such data is no longer the major technological hurdle, neither is the nanotechnology behind sensing systems nor robotic engineering such as micromechanical insects that can crawl behind the walls or even fly autonomously around. Rather, processing and analysis of massive amounts of data will become overwhelming for the networks of computers that monitor and control our lives. They are based on the von Neumann architecture, where data must be constantly and sequentially exchanged between processor and memory. This is the bottleneck that limits the dystopian-utopian "advances" of the machine. Its fundamental problem stems from the engineers who first interpreted and developed Turing's underlying design principles of computer processors. They underestimated advances in computation and network complexity, so creating machines strangely alien to the 21st century human condition. Consequently, we have become the adaptors and are the ones who have mentally changed to overcome the limitations of the machine. Our society has mutated thought and action to keep the machine operating – but it is like a ticking time bomb.

Information processing evolved from what can be termed a Newtonian-Industrial evolution, something deeply connected to the philosophical tenants of the Enlightenment. This is entrenched in Western reductionist values inappropriate for the 21st century human except perhaps the corporate slave. The Enlightenment was an attempt to eliminate all mystical aspects of societal behavior. Technology, Art and Aesthetics evolved from 'making and doing' activities of all kinds, ranging from weaponry to painting. They were an art – craft; their manifestation were dreams and nightmares resulting in atom bombs and flying to the moon. Newton's publication of *Principia* in the 17th century, the Industrial Revolution during the 18th and 19th centuries and the Enlightenment set the scene for the systematical categorization, organization, exploration and supposed "understanding" of everything, down to the mechanization of God itself. Indeed this emergimg movement was promulgated as an advancement over prevailing philosophies of contemporary cultures and their excessive superstitions.

However, in this new industrial society, the human was relegated to status of a machine-slave, a conformist unit that could be replaced like a cog in a machine: the metaphorical "brick in the wall". In the 21st century, similar practices still dominate the dehumanizing industrial model through manipulation of humanity and the power of money as a metric of society. The machines and computers that we developed, starting in the 18th century, have an underlying design error principle: an abhorrent inhuman reductionism whose deficiencies and limitations are a prevalent factor in the global suffering of the masses today.

There is something that Newton's equations couldn't have have predicted: emergent collective behavior where new properties arise from connections and interfaces, not simply the individual working components. Self-organized behavior in networks of sufficient complexity and connectivity leads to chaos, bifurcations and the generation of wave patterns. Somewhat paradoxically, Alan Turing first shed light on this behavior in his seminal paper on morphogenesis. His name is associated with the birth of the modern day computer but this natural phenomenon of coupled reactions (morphogenisis) and his forgotten alternative proposal for a thinking machine based on randomly interconnected brain-like structures of NAND gates were themes he developed before his untimely death. Both are one of many examples of brilliant theories discarded in the mainstream rollercoaster of technological progress.

Today's real world is a hierarchy of interfaces. They connect all the way down from satellites to global planetary networks of fiber optic cables to nanosystems of atoms, electrons and nuclei. We are in an electronic-photonic-electromagnetic primordial soup that is bubbling with unexpected emergent behavior and self-generation of complex phenomena. The exponentially growing number of connections, nodes and data flow is straining the inbuilt reductionism of its control core. Non-linear correlations naturally arise from this synthetic world. They exhibit self-organized

criticality with a spectrum of fluctuations born of nature. These fluctuations have already resulted in financial meltdowns, and more electronic earthquakes are on the way with potentially catastrophic consequences to society beyond imagination.

There is a need for new technologies that exhibit emergent, inherent intelligence to handle the complex, interconnected and dynamically evolving networks of exponentially increasing information floating up to the "Cloud". There is a need for systems to deal with a world of industrial pollution, resulting climate change, and the delicate interconnections the machines cannot currently sense. To save ourselves we need intelligent machines. These require major paradigm shifts in our underlying Information and Communications Technology (ICT). We need efficient interfaces to connect our physical world and ourselves responsibly to "spaceship earth" and the network. Complexity evolves already in ITC phase space. We need a new way to learn "to learn", and to let humanity regain some power over the machine. If we can, then eventually we may impart higher senses into the system and manifest an ephemeralism in the human-mediated machine-network. Such attributes constitute a culture of coupling human and machine; an interfacial intelligence facilitating the generation of systems capable of mediation and manipulation of the superposition of individuals' behavior non-statistically that will lead to accelerating the growth of an ethereal collective human consciousness.

We as scientists are guilty of propagating an overreliance on reductionism by applying linear mathematical equations to everything we get our hands on, be it particle physics or social phenomena. Holism, hasn't made an impression on our world; Aristotle declared, "The whole is more than the sum of its parts" and in 2010 Steven Hawking restated more or less the same mantra in predicting that this century would be the science of complexity. Connections are more important than components. Self-similarity in almost everything we observe around us makes this self-evident. Consider fractal geometry. Everywhere we see very complex fractal expressionism, for example in the mind behind Jackson Pollock's drip paintings, changing in fractal dimensions as time evolves. Your own mind, be it scientific or artistic, is perched on an "edge of chaos" characterized by the phenomena of self-organized criticality (SOC). The pervasiveness of SOC is evident from its relevance to the scaling properties of earthquakes, global financial fluctuations and gang behavior in Los Angeles right down to brain activity.

Ordered systems are stable, static and useless for creating intelligence which is dynamic and responsive. On the other hand, chaotic systems, though highly dynamic, are susceptible to massive changes from even a tiny perturbation. Chaos is commonly explained in terms of how the disturbance of a butterfly wing can trigger a hurricane on the other side of the world. In SOC, information is essentially distributed throughout the entire system holographically. This is a very desirable situation for the emergence of intelligent behavior and it is a scale-invariant, robust organizational behavior that facilitates connectionism. In that sense, I find Buddhism to be a close human analogue demonstrating SOC at the interface of body and mind. Yet, institutional education continues to "teach" us to think in "ordered = static = unimaginative" ways.

ICT connectionism extends all the way from society to humans to networks to nanosystems. I would argue that even individuals and groups who have no knowledge of a computer are ICT mediated. In small world networks, nodes added or removed maintain system stability but are resilient only up to a point where unpredictable collapse may occur. Living systems are similar. They are "open" and require a constant flow of matter and energy, but they also maintain a boundary between themselves and the outside world.

In 1983, Hans Kuhn wrote a paper entitled "Origin of life and physics: Diversified microstructure - Inducement to form Information - Carrying and Knowledge = Accumulating systems". He argued, "data processing, at this stage, is not confined to the brain of the human observer. It takes place in human society beginning with the publication of conference papers by the observers. From many papers, some are selected, by acquiring more recognition from the scientific community than others. The ideas given in these papers interact and compete in many ways, and this process of multiplication, mutation, selection, and recombination is repeated many times. Textbooks appear and compete; what survives in this long Knowledge-Producing process is the physics of the time." Using these arguments he goes on to discuss ways to generate a system that may exhibit characteristics of intelligence in a wet porous medium using polymeric molecules subjected to programmed environmental changes. Rolf Landauer showed that computation costs energy in the form of disorder with a minimal factor expressed as kT log 2, a factor that is also the energy required to operate Maxwell's demon. Kuhn incorporates entropy production as an essential part of his design scheme. Entropy production is essential for life. The second law of thermodynamics states that all closed systems will tend towards a system of maximum disorder. Thermodynamics describes "closed systems" where matter and energy are conserved. Here, the 2nd law states that the system will decay to a system of maximum entropy. For instance, chemical reactants will strive towards an equilibrium state of maximum entropy and minimum energy as determined by the relation $\Delta G=\Delta H-T\,\Delta S$, which describes the relationship of the changes in Gibbs free energy, ΔG, to that of enthalpy, ΔH, temperature, T, and the change in entropy, ΔS.

Open systems cannot be described by this equation, but the same inescapable entropic considerations apply. In open systems there is a constant flow of matter; such as liquid, and/or energy, such as electricity. In living systems, entropy is produced and eliminated like sewage or waste heat in a manner that counteracts internal system disorder (entropy), thereby delaying decay so that humans defy the 2nd law during their short lives. Every drop of the 57–75 % of fluid in our bodies is furthermore non-Newtonian, and our brain, the ultimate basis of human thought, has not even a superficial resemblance to a computer. In living systems, these "moist media" conditions facilitate the *maintenance of a* memory kernel in the system, possibly as a non-optical hologram. Intelligence involves this trace of the past in the process of evolution.

Almost nothing in the real world follows the classical laws of physics. The Gaussian bell curve or Normal distribution that statisticians use to predict average and deviations doesn't apply to our most human behavior or biology.

We, as artists, scientists, or people with crazy ideas, are on the edges of the "fat tail" curves. Such people tend to have a disproportionate influence on the (r)evolution of society. History has borne this out time and time again through the shifters and movers that continue to shape our "complex" world. Complexity and chaos theory hasn't explained anything of consequence to pacify that notion; primarily because the underlying mathematical basis uses the same reductionist assumptions. The ability to predict behavior that occurs emergently and often unexpectedly out on the edges of the "fat tail curve" is more or less impossible or relies on empiricism such as fractal mathematics. The underlying architecture prevents the needed scaling up in interaction space. One can trace this to the false fundamentals of the belief system of Enlightenment philosophies. In the world of computers, vast databases of emails chronicle human interactions. Studies of scaling in these interactions reveal long-term persistence, suggesting the existence of an underlying process that provides long-term correlations in the machine. I believe this is the consequence of human intelligence mediated by networks.

The mind of an artist paints a different picture of 'complexity'. Creation occurs in an ephemeral space where process has no apparent logical manifestation to an external observer. It embraces and relies upon non-linearity, upon collective and emergent phenomena. Artists are "attached observers" by virtue of their mode of interaction with their surroundings and other people. Yet in a human sense it is simpler to appreciate intuition than complex mathematical rationalizations. The mind of the modern artist has, by force of connectivity, accepted complexity as intuitive and natural. The additional layer of interconnectivity mediated by technology has enabled media artists and art | scientists to interact on higher collective SOC levels. Intelligence is not in the networks themselves but in the correlations that human-machine interfaces provide. SOC enables the emotion and feeling of the human to extend sensory awareness beyond the confines of spatial and temporal locality by some added dimension. This creates a type Chi-like energy flow through the hierarchal layers of networks, from nanosystems all the way to their brains. It resembles the primitive explanation of nature and the role of connectionism described by quantum mechanics.

In "The Architecture of Complexity" published in 1962, Herbert A. Simon stated, "Empirically, a large proportion of the complex systems we observe in nature exhibit hierarchic structure. On theoretical grounds we expect complex systems to be hierarchies in a world in which complexity had to evolve from simplicity". Recent research confirms this statement in the experimental analysis of similar hierarchal layers found in VSLI circuits, nematodes and human brain MRI and ECG activity. They all follow Rent's rule, which states that a network's interconnectivity and wiring complexity follow a log-log relationship. For a scientist or engineer, most of the 'detail' is focused on a state description, *however* underlying that description is a fundamental correlationbetween the state and the process by which it was formed. Process is essentially typical of artists. The process over the state leads to powerful emergent creativity and imagination.

Human multisensory experience is more similar to artistic process than scientific analysis. The senses of taste, smell, temperature, touch etc. and subtle yet powerful 'small world'-like interactions are all taken in by the mind and "processed" in a non-linear and connected manner to result in a reaction-action outcome. That, in turn, alters the senses and modifies the network in a recursive manner. The scientific process is based on the impossible "unattached observer". It cannot reduce senses and translate them to human experience. The "three body problem" in quantum mechanics serves as an illustrative example of such a situation where we can't exactly solve the equation of say one nucleus and two electrons interacting as a Helium atom despite our ability to do so with two particles (electron and a proton in a Hydrogen atoms). To reach a solution we approximate, and as we approximate we simplify. Information is destroyed along the way in an attempt to uphold the tenants of Enlightenment memory that dominates our history. This is done to the point where the world of science has to live with paradoxes and assumptions that are inherently wrong. We lose reality in this rationalization.

Machines that compute were born from reductionist thinking like the discrete evolution of VLSI circuits. Components such as transistors, in predefined locations, connected by charted layouts of static linear wires arose from reductionist thought and became the architecture of the IT world. Like the scientists and engineers that designed them, they are structures that rely on isolation and reductionist principles to work. As problems become more complex and as more "bodies" are involved, the amount of data going back and forward between the memory and processor quickly chokes the system. Humans are instructed to follow similar paths, as exhibited by Los Angeles highway traffic jams at rush hour. In contrast, the brain is actually less efficiently wired than that of modern VLSI circuits, but the self-organization employed by nature enables dynamic rewiring of the network . It is not concerned with the cost. Rather, it simply finds better ways to use the wires and nodes.

So where do we go from here? Can we extend the "legacy system" that packs more additional software on top of what we already compiled in the past? Is the solution more nano-memory and faster processors? No, for they are already at the edge of meltdown and close to the thermodynamic, quantum and thermal limits. The problem cannot be solved by *extending* the old model of computers, and there is no evidence of state based intelligence to date. Then what is the intelligence we need? An intelligent system must possess (or generate) the seeds of correlations of any order or scale. From neuronal networks to interstellar nebulas, we see SOC in turbulence. These critical states, with their hidden dimension and holographic properties, are the natural world. Our minds have inherent SOC. We don't need to discover it. Optical holograms are a realization of the associative memory function inherent to and distributed in the brain. Can we, as Gordon Pask put it "Learn to learn" or as Roy Ascot suggested "programming to program"? The answer may lie in concepts that allow the machine to evolve independently without programmatic requirements except one: the law of nature and its tendency toward SOC.

Hybridism of art and science is Buckminster Fuller's definition of complete integration of the individual. This is the starting point to create the "intelligent machine"

capable of non-linear and direct SOC mediation of human thought and the environment. To learn "to learn", let us take an extreme polymath approach where humans engage the process of artistic creativity with scientific constructional methodology. If we have to give it a new name then call it a process, not a state. Let "Self Organized Critical Thinking" (SOCT) describe where we can move beyond the "Enlightenment" to a form of Techno-Satori.

ACKNOWLEDGEMENTS:
It's a pleasure to thank Victoria Vesna who has been a continual source of inspiration, collaboration and teacher of the process of learning to learn without who this paper would not be possible, Roy Ascott, guru and teacher who is connected to this paper in many ways, Todd Hilton of DARPA whose inspiration in Physical Intelligence (PI) raised my awareness of SOC as well as the UCLA-CNSI NanoPico Lab PI team and the Material Nanoarchitectonics (MANA) Brain team in NIMS Tsukuba, especially Masa Aono. This work was supported in part by IMERA where, with Roger Malina and the residents, I was provided an opportunity to think out of the box in Marseille as a senior research fellow. I acknowledge the Art|Sci Center, CNSI and the Broad Art Center at UCLA for providing the creative atmosphere to explore the relationship of art and science.

REFERENCES

ANDRADE, J.S. Jr., et al (1995), 'Self-organized criticality in the El Ninio Southern Oscillation', Physica A, 215, 331-38.
ASCOTT, R. (2000), Art, Technology, Consciousness: mind@large (Bristol: Intellect).
BENNETT, C. (1982), 'The Thermodynamics of Computation: A Review', International Journal of Theoretical Physics, 21 (12).
BENNETT, C (2003), 'Notes on Landauer's Principle, Reversible Computation and Maxwell's Demon', Studies in History and Philosophy of Modern Physics, 34, 501–10.
CHRISTIE, P. and Stroobandt, D. (2000), 'The Interpretation and Application of Rent's Rule', IEEE Trans. on VLSI Systems, Special Issue on System Level Interconnect Prediction, 8 (6), 639–48.
COPELAND, B.J. and PROUDFOOT, D. (1999), 'Alan Turing's forgotten ideas in computer science', Scientific American, April, 99.
GIMZEWSKI, J.K. (2006), 'Nanotecnologica: L'ultimo carta del materialisme: la metamorforsi de l'atomisme i la revolucio de la creativitat', Fiscia de l'estetica: Noves fronteres de la ciencia, l'art i el pensament (Barcelona: KRTU).
GIMZEWSKI, J.K (2007), 'Nanotechnology: The Endgame of Materialism', Leonardo, 41 (3), 259–64.
GIMZEWSKI, J.K. and VESNA, V. (2003), 'The Nanoneme Syndrome: Blurring of fact and fiction in the construction of a new science', Technoetic Arts, 1, 7–24.
GIMZEWSKI, J.K. and VESNA, V. (2005), 'Nano: An Exhibition of Scale and Senses', Leonardo, 38 (4), 310–11.
GIMZEWSKI, J.K. and VESNA, V. (2006), 'The Future', in R. Ascott (ed.), Engineering Nature: Art and Consciousness in the Post-Biological Era (Bristol: Intellect).
HASEGAWA, T., et al (2010), 'Experimental Demonstration of Short and Long Term Neuromorphic Learning Abilities Realized in a Gap Space Atomic Switch', Advanced Materials, (in press).
KUHN, H. (1972), 'Self-organization of molecular systems and evolution of the genetic apparatus', Angew. Chem. (Internat. Ed.), 11, 798.
KUHN, H. (1988), 'Origin of Life and Physics: Diversified microstructures–inducement to form information-carrying and knowledge-accumulating systems', IBM Journal of Research and Development, 32 (1), 37–46.
LAGZI, I., et al (2010), 'Maze Solving by Chemotactic Droplets', J. Am. Chem. Soc., 132 (4), 1198–99.
LANDAUER, R. (1961), 'Irreversibility and heat generation in the computing process', IBM Journal of Research and Development, 5, 183–91.
PASK, G. (1958), 'Physical Analogues to a Growth of Concept', Mechanization of Through Process: Proc. Symp. National Physical Laboratory, 765–94.
PASK, G. (1968), 'Man as a System that Needs to Learn', in D. Stewart (ed.), Automation Theory and Learning Systems (London: Academic Press), 137–208.
RYBSKI, D., et al (2009), 'Scaling Laws of Human Interaction Activity', Proc. of the National Academy of Sciences, 106 (31), 12640-45.
SAARINEN, A., LINNE, M-L., and YLI-HARJA, O. (2008), 'Stochastic Differential Equation Model for Cerebellar Granule Cell Excitability', PLoS Computational Biology, 4 (2), e1000004.
SEAMAN, B. (2009), '(Re)Thinking: The body, generative tool and computational articulation', Technoetic Arts, 7 (3).
SIMON, H. (1962), 'The Architecture of Complexity', Proc. of the American Philosophical Society, 106 (6).
TURCOTTE, D. and RUNDLE, J. (2002), 'Self-organized complexity in the physical, biological and social sciences', Proc. of the National Academy of Sciences, 99, 2463–65.
TURING, A. M. (1990), 'The chemical basis of morphogenesis', Bulletin of Mathematical Biology, 52 (1–2), 153–97.
VESNA, V. 'An Introduction to Buckminster Fuller by Victoria Vesna', [webpage: http://vv.arts.ucla.edu/publications/newarchive/Introduction%20to%20Buckminster%20Fuller/506.htm], accessed 9/13/2010.
VESNA, V. (2007), 'Seeing the world in a grain of sand: The database aesthetics of everything', in V. Vesna (ed.), Database Aesthetics: Art in the Age of Information Overflow (Minneapolis: University of Minnesota Press).
WATTS, D. and STROGATZ, S. (1998), 'Collective dynamics of 'small-world' networks', Nature, 393, 440.
WEINBERGER, D., MOORE, S., and BULLMORE, E. (2010), 'Efficient Physical Embedding of Topologically Complex Information Processing Networks in Brains and Computer Circuits', PLoS Computational Biology, 6 (4), e1000748.
WORRELL, G., et al (2002), 'Evidence for self-organized criticality in human epileptic hippocampus', Neurophysiology, Basic and Clinical, 13 (16).

Luis Miguel Girão

THE PLANETARY COLLEGIUM, UK.
FOUNDATION FOR SCIENCE AND TECHNOLOGY, LISBON, PORTUGAL
ARTSHARE, LDA, AVEIRO, PORTUGAL.
CESEM – FCSH, NEW UNIVERSITY OF LISBON, PORTUGAL
luis.miguel.girao@artshare.com.pt

INTEGRATIVE ART – THE WONDERS OF BIOELECTROMAGNETIC MODULATION

When Álvaro Pascual-Leone, from the Beth Israel Deaconess Medical Center, Harvard Medical School, presented the footage of one of his patients suffering from Parkinson Syndrome, before and after undertaking an rTMS treatment, the audience was amazed. The gentleman on the video, who could not walk more than a few steps at a time was, due to the effects of a specific neuromodulation technique, walking at a fast pace immediately after the treatment.

An experience of this sort, even if it does not last more than a few dozen minutes, is surely not considered by the subject to be a simulation. It is something that really happened. Something really real.

The integration of experiences in daily life that transform consciousness have been pursued by artists for a long time. The old Fluxus' saying: "Life is Art, Art is Life" is a good example of that. Bioelectromagnetic techniques applied for artistic expression allow for the birth of Integrative Art: a sort of artistic practice that is non-representational, non-simulatory and in its extreme form might become non-mediated.

This paper reports on the latest developments in the research of bioelectromagnetism as integrative art form and brings into discussion instrumental concepts for the transformation of a philosophical approach to consciousness. Ideas such as transsynaptic phenomena, stochastic magnetic modulation, bioelectromagnetic entrainment and argumentative interaction contribute to strengthen the thesis of Panpsychism.

BIOELECTROMAGNETIC MODULATION

Modulation is the keyword for the accounts of bioelectromagnetics and it is also of great relevance to the field of artistic expression. The idea that a work of art establishes a relationship with the audience that allows the transformation of consciousness by processes of modulation is an extremely appealing one. It is an analogy to how theories of electromagnetism describe and characterize natural phenomena. Understanding biological entities from this perspective brings to discussion bioelectromagnetism as a form of art by intrinsic definition. In this context, art practice is a process of mediation amongst and between human beings.

Nowadays, the most popular form of bioelectromagnetic modulation is neuromodulation; i.e., to transform electromagnetic fields found in neurons by the presence of another electromagnetic field artificially generated by electronic means. This kind of stimulation is considered to be non-invasive as opposed to the ones that imply the direct contact between electrodes and brain tissue, such as Deep Brain Stimulation.

Transcranial Magnetic Stimulation – TMS – is without any doubt the sort of non-invasive stimulation which sees a larger growth in research investment, and consequently number of scientific articles published. The main reason behind this fact is the apparent characteristic of a narrower focus on the area to be stimulated, in comparison with the pre-existing technique, Transcranial Current Stimulation – tCs.

tCs is divided into two different techniques: Transcranial Direct Current Stimulation – tDCs, and Transcranial Alternate Current Stimulation – tACs. The type of current they utilize being the obvious difference between them. Due to its portability, tDCs is the most used: a couple of electrodes and a nine Volts battery are the components needed. tACs applies a little bit more complex circuitry for the modulation of the signal produced. Both these techniques can be divided into Anodal and Cathodal according to the positioning in the scalp of both electrodes and the consequent direction of the current flow.

TMS is usually applied in different parts of the brain as well as in some points of the spinal cord. The focality of this sort of stimulation results from the technique applied: electric current flowing through two adjacent coils, but in opposite directions, generate a differential magnetic field with its intensity centre at a considerable distance from the coils. The assembly of the coils as well as its shape are played with in several models in order to modulate the deepness and intensity of the resulting magnetic field. In a further developed H shaped coil, by BrainsWay, an Israeli company, the deepness of the magnetic field is such that it is classified as Deep Transcranial Brain Stimulation – dTMS. These coils are connected to an electronic device that generates electric currents of such intensity and voltage that they are able to deliver the produced field at a maximum intensity of three Tesla. The intensity of the field needs to be of this magnitude due to the electromagnetic shielding provided by the human skull and bones.

The signal applied in TMS can be modulated mainly in three different ways. A single burst is the basic one and has no pervasive effects. This means, that the effects only occur while the cause is active. Repetitive Transcranial Magnetic Stimulation – rTMS – is the repetition of single peaks in a constant frequency that can be of approximately 1 Hz, Low Frequency, or 5 Hz, High Frequency. This sort of modulation is applied for about two seconds with pauses of variable duration, but always constant in each treatment. TBS – Theta Burst Stimulation is a second order modulation that applies LF or HF burst in sequences of three bursts separated by small pause (micro-seconds). This sort of

stimulation is applied continuously, for about 40 seconds, or intermittently, two seconds of stimulation followed by "silent" intervals of eight seconds and so forth. A combined technique of TMS and a slow-rate repetitive low-frequency median nerve stimulation, for instance like nerves of the hand, composes the Paired Associative Stimulation – PAS. All of the types previously described, from rTMS to PAS, have pervasive effects that have been reported in different studies of durations from 20 minutes to 24 hours.

Anthony Barker, the one who realized the first TMS experiment, in his opening keynote of the Magstim/University of Oxford TMS Summer School, 29 June 2010, very clearly stated the widespread range of TMS. Although the intensity of the stimulating electromagnetic field is much smaller than that of previous techniques, the entire nervous system is engaged in the stimulation. This idea corroborates the great interest stated by Alvaro Pacual-Leone, at the HIVE Workshop, in Barcelona, 11 June 2010, on transsynaptic phenomena. Transsynaptic means the travelling of nerve impulses resulting from stimulation in-between neurons through synapses. This is the phenomenon that gives origin to the study of brain pathways indicating non-locality of brain activity specifically related to certain effects.

At this point I would like to question the relevance of the study of brain pathways based on the basic deduction, since all these sorts of experiments are based on an electromagnetic technique. The types of stimulation that have been described above are perpetrated by electromagnetic fields. Almost all scientific studies on this field dismiss the electromagnetic characteristics of the brain. From the moment the stimulation acts on the neurons, phenomena are described as being merely electric, as if it was possible to dissociate magnetism and electricity.

This idea is corroborated by recent studies on robotics that show that magnetic broadcasting happens along the nervous system and is stochastically interpreted by parts of the body, such as muscle sarcomeres. This idea, that was initially pointed out to me by Professor Des Mapps, leads me to be more interested in what I define as a "holistic" approach to bioelectromagnetic stimulation. Of course, the example closer to this conceptualization is the Micro Wave Auditory Effect, by which a general electromagnetic projection over the human nervous system is filtered by a specific part of the system that resonates along with the field to which it is presented. This sort of "tuning" effect allows the modulation of a signal that induce the sensation of sounds in the subject, without them being present in its mechanical/acoustic form.

APPLICATION EXAMPLES AND INSTRUMENT BUILDING

Àlvaro Pascual-Leone, from the Harvard Medical School was recently awarded a prize from the Michael J. Fox Foundation for his studies on the potential of rTMS to improve motor as well as mood symptoms in Parkinson's disease. The preliminary results presented in the HIVE workshops were astonishing. After 20 minutes of stimulative treatment the client was able to walk normally, when before he could only make a couple of steps at a time. Pascual-Leone reiterates the fact that effects are not normalized throughout the population of clients. They vary according to the subject. This does not seem strange to me as the characteristics of the available stimulations are not adjustable to fit each individual. This seems to be the opinion of others, as will be described later. MIT neuroscientists led by Rebecca Sax demonstrated the reduction of the role of beliefs in moral judgements caused by the disruptions created by neuromodulation of the right temporoparietal junction of the brain. This study brings relevance to this area of the brain as directly related to moral judgements but we know from studies by Olaf Blanke that this area of the brain is also related to the induction of out-of-body experiences. Furthermore, this study tries to establish what I believe is yet an assumption, that the brain is the origin of moral judgement. The fact that the inhibition of a specific area of the brain provokes changes in the way some subjects produce moral judgements, does not necessarily mean that it is the origin of the judgement. It can just be the medium through which mental activity is conveyed.

The fact is that neuromodulation has great potential, not only for the study of the functioning of the brain, but also for the direct communication between electronic devices and the human brain. Even previous to this, is the artistic contextual application of the already existing devices helping to fulfil the social function of art in the transformation of consciousness and the questioning of physical existence.

The Hyper Interaction Viability Experiments project, coordinated by Giulio Ruffinni (Starlab, Barcelona) aims to "probe the limits of non-invasive computer-to-brain interfaces". This four-year project (2008–2012) has as outcome the development of a new interface for Human Computer Interaction based on non-invasive brain stimulation. The most recent version proposed a four channel multi-point tACs allowing for waveform control, including frequency and phase adjustments. This seems to be a very promising device as it incorporates solutions for adaptation of the stimulating device to the characteristic of the subject. This is extremely relevant for the consistency of such application.

Although the device proposed by the HIVE project is a great step forward in the direction of multi-point development , I am pointing in my own developments to the creation of more global devices. Furthermore, I believe that the integration of signal generation techniques such as Power Width Modulation associated with Stochastic Magnetic Resonance can bring incredibly unexpected results mainly on what concerns the efficacy of the stimulation.

DISCUSSION

Non-localization seems to be the word when it comes to a theoretical alternative to what has become the mainstream of scientific thought on what concerns neuromodulation. It is here that I again find artistic thinking and practice to be crucial in the opening of new ways for development in the fields of knowledge, including scientific ones. Mainly because of its transdisciplinary nature, artistic practice calls for a wider view over these latest scientific achievements.

This general idea would be translated into something that could be considered as intermediary between holism and reductionism. Something that would not consider the whole as result of the parts, nor the parts as a mere reaction to a latent energy that spreads out in the cosmos. Something between absolute time and durational time: Relational Time. This idea has been presented in previous articles when referring to the theories of Doubochinski and

Tennenbaum such as Argumental Interaction. The Einstein, Podolsky and Rosen paradox, that became the EPR principle reiterates the possibility of inter-relational realities. The whole as being the relation of the parts.

Therefore, with bioelectromagnetism being the main focus of the research, and considering the ideas presented above, it becomes almost inevitable to be directed towards a panpsychic approach where consciousness is in the relations of the parts. In this hypothesis, consciousness is the modulation process that implies action and interpretation. Enaction as a way of accessing as well as creating consciousness. Motion as origin.

Energy as the potential for transformation that is always dynamic and relational by nature. From this point of view, Bioelectromagnetic Entities are (non)harmonic structures that are in relation with the infinitely big and small, not as product of it but as a constitutive part.

The way to interact with these Bioelectromagnetic Entities is through bioelectromagnetism that in itself is a form of art, because it is the transformation of consciousness. Therefore, no difference does exist between artistic experience, scientific experience or life experience. They are all integrated in a single experience, always.

Bioelectromagnetic Art is up to today the most evolved form of expression of Integrative Art where “Art is Life and Life is Art”.

CONCLUSIONS AND FURTHER DEVELOPMENTS

In order to confront the beliefs presented in the previous section and in order to implement them in society, I plan to further experiment with bioelectromagnetic modulation tackling what is defined in scientific terms as time illusions, illusory sensation of movements as well as illusory sensation of presence. Following up previous scientific experiments reported by others, the artistic re-contextualization of this type of scientific experiments will hopefully create an evenly blurred but yet significant sketch of a manifestation of truly transdisciplinary knowledge. This manifestation will raise questions about differences, commonalties and relationships between the concepts of illusion, representation, simulation, reality and mediation.

Jane Grant

ASSOCIATE PROFESSOR (READER) IN DIGITAL ARTS
SCHOOL OF ART AND MEDIA, UNIVERSITY OF PLYMOUTH, UK.
jane.grant@plymouth.ac.uk

NOISE: NETWORKS, SENSATION, EXPERIENCE.

"Reality will always remain 'unknowable'. What scientific work elicits from our primary sense perceptions will consist in an insight into connections and interdependencies which are present in the external world, which can somehow or other be reliably reproduced or reflected in the internal world of our thoughts, and the knowledge of which will enable us to 'understand' something in the external world" (Freud, 1949).

This extract from Sigmund Freud, written around 1938 is concerned primarily with the interpretation of experience sought through our senses into a picture, a thought, meaning, something static or whole. There is an anticipatory aspect to this text as if Freud, archeologist of the mind, foresees that the unpacking of human consciousness will result in the exposure of an internal world which might very well surpass the complexities, "connections and interdependencies" of the functioning of the human brain.

The analogy of likening the workings of the mind to archeology bears little resemblance to many of the correlations attributed to the networks of the mapping of neurons currently in play in more recent research in neuroscience, where physical and computational models are examined and created.

What we experience as consciousness occurs at many different cortical locations and timescales. In the paper "Polychronization: Computation with Spikes" (Izhikevich 2004), Izhikevich discusses one of the simulated, anatomically realistic models of 100,000 cortical spiking neurons that he and his team have created. These networks of spiking neurons form polychronous (multiple or many times) groups which fire with 'millisecond precision'. The connection strength between pairs and groups of neurons is intricately dependent upon the difference between spike arrival times, a phenomenon known as Spike Timing Dependent Plasticity. (Song et al 2000). Firing groups are "time-locked but not synchronous". These time based clusters or groups across the cortex give rise to the beginning of "simple thought and memory" (Izhikevich, 2004).

These groups are interesting as they form as a result of Spike Timing Dependent Plasticity, not as a consequence of anatomical clustering. The groups emerge from the "dynamics of the connectivity between the neurons" (Izhikevich, 2004). The polychronous groups, because of this continual formation, grow and then disappear, although some "live" and become more permanent in the model. It could be said that the groups emerge from time, not matter, and are the evolution of minute and distinct temporalities.

Izhikevich likens the network of polychronous groups to the immune system in which we appear to have antibodies for all possible antigens, "even those that do not exist on earth". There are 10 to the power 11 neurons in the human brain. Therefore it is likely that there would be more polychronous groups of neurons than the number of particles in the universe, and it is this almost infinite combination of possible firing patterns or groups which enables the human brain to possess with so much processing power. Izhikevich proposes that these groups contain all possible variation of both thought that is, and thought that is to come – all potential manifestation of human cognition.

The "focus of attention" (Izhikevich 2004) is a term employed by the research group to describe a phenomenon where the cortex re-lives or re-visits a particular pattern of neural activity. The significance of polychronous groups is that they may represent memories or experience. Normally "noise" would drive the entire experiment throughout, however, the system modelled with Spike Timing Dependent Plasticity, whilst initially dependent on noise as a stimulant, becomes autonomous, self activating once a certain threshold is achieved. The model, devoid of any stimulation or articulate input generates random memories or experiences not associated with any previous input. "If the size of the network exceeds a certain threshold, a random activation of a few groups representing a previously seen stimulus may activate other groups representing the same stimulus so that the total number of activated groups is comparable to the number of activated groups that occurs when the stimulus is actually present and it is the focus of attention." (Izhikevich, 2004)

However, when stimulus is not present, the artificial cortex, driven by noisy currents, re-visits some of these firing clusters, following the formation of pathways previously established through external and internal stimulation. In a sense it could be said, that the cortex re-lives previous experiences.

"One can say that the network 'thinks' of the stimulus – that is, it pays attention to the memory of the stimulus. Such 'thinking' resembles 'experiencing' the stimulus. A sequence of spontaneous activations corresponding to one stimulus, then another, and so on may be related to the stream of primary (perceptual or sensory) consciousness" (Izhikevich 2004).

These streams of primary, perceptual and sensory consciousness are the minute and temporal architectures of the brain, fleeting structures built of time. They are remarkable, as the neuronal firing events that the stimulus triggered remain, albeit temporarily, despite that they are being no longer physically, sensorially activated.

But what are these events that the cortical structures "experience'"? In terms of time, the precise, but very fleeting

FIG. 1: *The Fragmented Orchestra, 2008, installated at FACT Foundation for Art and Creative Technology, Liverpool, UK. (Jane Grant, John Matthias, Nick Ryan)*

nature of these events, are coupled with the exactitude of the millisecond, moreover each firing event has a potential infinite dimensionality – this is complexity in process, emerging sensation, thought in the space of becoming.

In "The Thinking-Feeling of What Happens", Brian Massumi defines "reality" as a series of appearances – "an experiential dissolve. There's no determinate transition in a dissolve, just a continuous fading-out overlapping with a continuous fading-in. The point at which the changeover occurs is imperceptible by nature. It is purely abstract. But it must have happened. We know it did, because even if it wasn't perceived, it was unmistakably felt. Known-felt, thought felt. A virtual affective event" (Massumi 2008). What is interesting here is that the system or event attributed to by Massumi is analogous to the Spike Timing Dependent Plasticity developed by Izhikevich and his team and in which he describes as "related to the stream of primary perceptual or sensory consciousness" (Izhikevich 2004), a continual looping and re-organizational activity.

How do we speak of the external world, and its folding in through the human sensorium? What conditions do we need to experience experiencing? In his essay, "Time shelters: an essay in the poetics of time", David Wood argues that boundaries of the self are interchangeable as states, that "a boundary is not a thing, but a cluster of procedures for the management of otherness" (Wood 2000). In "The Physical Apparatus and the External World", Sigmund Freud resignedly assigns the word "language" to describe our understanding or perception of the things/objects we perceive externally, "the language of our perception with which it is impossible to free ourselves" (Freud 1949). In dealing with the problem of the perceived loss of the complexity of the external world Freud voices his frustration in all the sciences including psychoanalytic theory, "If we could see clearly enough we should find that what appears to be a solid body is made up of particles', again 'Reality will always remain unknowable" (Freud, 1949). Freud's problem here lies in the word "language" coupled to perception, we do not need to free ourselves of this "language". Reality is not perceived as a discrete coding where external matter has its neuronal counterpart. Perception cannot be articulated within a structure of finite codes. The variations of the boundaries of experiencing are complex, shifting and infinite, the channels of sensory perception are always in motion.

> *"Movement multiplies visual and intermodal feedback loops. It enables a continuous, complexfying, cross-referencing of variations to each other – an indexing of aspects of unfolding experience to its own products and of its products to their ever-changing, unperceived field of emergence." (Massumi, 2002)*

Sensation is both a feeling and a thought. It is the "intermodal feedback loop" (Massumi, 2002) that keeps the brain from being silent, the noise in the system. But what of Izhikevich's autonomous re-visiting of neural pathways? In this instance the stimulus is gone, the system, re-living past experiences, reinforces and develops internally simulated pathways. This is the closed loop of experience without stimulus, the cortex unable to suck in external complexity journeys around its own structures reinforcing activity, building on memories and experiences that are not present externally.

The complexity of how this cortex perceives experience is extraordinary, a folding in of external and internal articulation, double looped, each side of the threshold of the self causing a reinforcement, a further folding in of experience, sensory architecture building into an endogenous construction in time.

The Ganzfeld "entire or total field" experiment of the 1930s sought to explore extra-sensory perception using mild sensory deprivation, white light and "noise", in order to negate defined external stimulation. Regardless of the controversial findings in the field of parapsychology, what became apparent, was that the unstimulated or sensorially deprived visual cortex begins to conjure vague images or impressions of scenes. Age related macular degeneration consists of loss of vision occurring at the centre of the visual field. This lack of visual information causes blurred vision and eventually the loss of vision itself. In many cases it also results in the phenomena of hallucination ranging from mild to impressively articulate. These hallucinations are thought to be caused by the absence of continual visual information relayed from the retina through to the brain, the brain "filling in" for the sensory information it lacks. In Ganzfeld, whist every care is taken to deprive the brain of any stimulus; sound, vision and, of course, movement, there is no clean slate here. The brain as we have seen from Izhikevich's model, despite the stimulus being removed creates its own activity, re-visits past experiences, pulling them into the context of the present.

Is this the experience of experiencing the "focus of attention" or "selective attention" (Izhikevich 2004) that Izhikevich alludes to? "Attention is not a command that comes from the 'higher' or 'executive' centre, it is an emerging property of simultaneous and regenerative activation" (Izhikevich, 2004).

The collaborative work, "The Fragmented Orchestra" by John Matthias, Nick Ryan and myself, **(FIG. 1)** was a huge geographically distributed, neuronal, sonic structure. Twenty-four sites across the UK were connected to each other to form a "neural" network, an artificial neuron was installed in each of the 24 locations which selected tiny fragments of sound from each site when they fired. These particles of sonic information were sent, via the Internet, across the cortex allowing the system to communicate with itself and in turn communicate with its audience. The sonic information captured at each of these sites was also transmitted to a central space at FACT in Liverpool, the heart of the work and online at www.thefragmentedorchestra.com. As a result, the artificial brain formed a cogent learning system of stimulus and response. The Fragmented Orchestra, in effect, selected and composed according to where it was its learning and how it responded to the external stimuli.

The neuronal modeling of the work was developed and adapted directly from the Izhikevich paper (2004) discussed above and was modeled using Spike Timing Dependent Plasticity, enabling our instrument to learn over time. The more stimuli the instrument received, the more it extended its sonic and computational response, continually developing new pathways over time. However, our model was also initially stimulated with "noise" exactly like the model developed by Izhikevich. An analysis of the confluence of the internally produced and external stimulus is difficult – however, in the playing of the instrument over the nine week period we perceived "sonic ghosts", tiny echoes of previous external stimulus re-worked into the system and buffering up against the sonic present. Further research into this folding in of external stimulation coupled with "noise", whether self generated or exterior is major aspect of our forthcoming work with the system.

> *"The Fragmented Orchestra combines conceptually simple but technically precise elements (microphone, speaker, communicator, and 'neuron') into an elegant, geographically-distributed network structure. The result is a vast musical brain, which promises to generate pieces that touch upon extraordinarily disparate aspects of music and culture, including audience participation, sampling as instrument, endogenous composition, aesthetics of technology, and more. Among the most intriguing of these many resonances is the way in which The Fragmented Orchestra establishes an audible analogy between the brain and the Internet, such that the music produced becomes an artifact of their parallel structures. This composition renders in sound the sense in which the internet is already a singular mind, the collective compositional creativity of the crowd singing in one voice." Aden Evens (2008), author of "Sound Ideas: Music, Machines, and Experience" (2005).*

The predecessor of The Fragmented Orchestra, the "Neurogranular Sampler" is a complex sonic instrument again including Spike Timing Dependent Plasticity. The sampler, as it folds in external sound sources composed by neuronal firing appears to create new time patterns and rhythms that destabilise temporal aural expectation (Grant et al, 2009). However, this is a much more closed system, without live external input, with which to consider. We have recognised that the system composes throughout its life span – for example a sound file played in to the system at the beginning of its "life" will sound quite different to the same file played subsequently; the shift is quite dramatic and can take place over the course of a few hours. It appears that the instrument is composing in time, whether it is developing its own "compositions" from the external input is not clear. The instrument also contains noise, an internal stimuli used to drive the system. It is very possible that the instrument, journeying around its own architecture is merging both internal and external information, re-visiting older, established pathways and using noise as buoyancy when external stimulus dies away. This causes a temporal overlapping of the present stimulus rubbing up against established events and noise in the system, a rupture in the flow of sensory and perceptual information.

In The Fragmented Orchestra, by extending the network across a physical space, we introduced levels of agency and intricacy into a system locked into its own pre-roll. Unmediated, un-orchestrated complexities generated by human consciousness and action or unintentional sonic acts spread the closely bound network – the 'edges' of the system smeared between the internal structure of the cortex and the external world.

Whilst this crossing of the threshold of the internal to the external and back again translates moments of sound into milliseconds of neuronal activity across timescales and

geographic spaces, there are losses in the conversion. Small interstices in the continual rendering between these internal architectures of the brain and the external world, experiential spaces in the nevertheless interlocking system of time and matter are the gaps where sensory and perceptual reality reside. A smearing of the external to internal, particle to neuron, millisecond to hour.

Furthermore, is it possible that technology can bind either side of the threshold of the self and render the flow experiential? Teasing out matter and bridging timescales, the binary code rendering and making vivid emerging complexities of the real.

REFERENCES:

EVENS, A. (2008) Unpublished, [Online], Available: www.thefragmentdorchestra.com

EVENS, A. (2005) Sound Ideas: Music, Machines, and Experience, Minneapolis and London: University of Minnesota Press.

FREUD, S. (1949) An Outline of Psychoanalysis, New York: W. W. Norton & Company, Inc.

GRANT J., HODGSON T., MATTHIAS J.R., and MIRANDA E.R. (2009) "Hearing Thinking", Lecture Notes in Computer Science, Germany: Springer.

IZHIKEVICH, E. (2006) Polychronization: Computation With Spikes, Neural Computation18: 245–282, [Online], Available: http://www.izhikevich.org/publications/spnet.pdf

MASSUMI, B. (2008) "The Thinking-Feeling of What Happens", Inflexions 1.1, "How is Research-Creation?" [Online], Available: www.inflexions.org

MASSUMI, B. (2002) Parables of the Virtual, Movement, Affect, Sensation, Durham and London: Duke University Press.

SONG, S., MILLER, K.D., ABBOTT, L.F. (2000) "Competitive Hebbian learning through spike timing dependent synaptic plasticity", Nature Neuroscience 3 921–926 [Online], Available: http://neurotheory.columbia.edu/~larry/SongNatNeuro00.pdf

WOOD, D. (2000) "Time shelters: an essay in the poetics of time", in Durie, R. (ed.) Time and the Instant: essays in the physics and philosophy of time, Manchester: Clinamen Press.

Salvatore Iaconesi

TECHNOLOGY RESEARCH, ART AND CREATIVE DIRECTION, FAKEPRESS, ITALY
salvatore.iaconesi@artisopensource.net

Luca Simeone

DESIGN ANTHROPOLOGIST
FAKEPRESS, ITALY
me@luca.simeone.name

CROSSING THE BOUNDARIES OF SACRED WORLDS. *An Augmented Reality Application Attempting to Visualize Other Orders of Reality.*

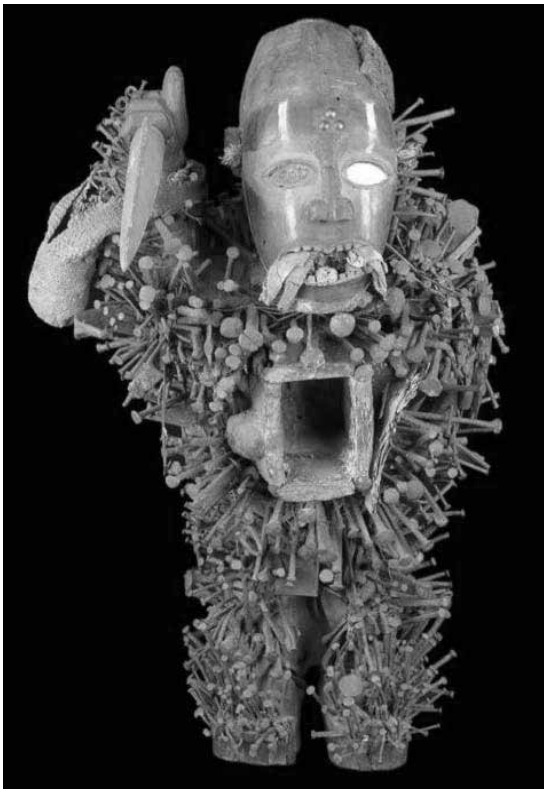


FIG. 1: *nkisi nkondi from Congo, Musée du Quai Branly*

INTRODUCTION

In traditional Congo society religious and medical experts, called *banganga*, perform a variety of rituals of protection and healing using potent artifacts called *nkisi* (plural *minkisi*).

Minkisi are considered power figures capable of inheriting the qualities of dead people through a ritual sometimes performed at their grave. The nkisi becomes the recipient of the deceased's soul (*mooyo*) and in particular of his/her personal qualities, based on the reputation he/she had while still alive (e.g. physical strength, hunting prowess, or sexual attractiveness).

The minkisi embody the deceased's personal characteristics and the banganga then pass them onto their clients who need them [1].

Congo was a place of historic importance for what is referred to as the *Black Atlantic*, the triangle related to slavery, and hundreds of thousands of people were expatriated from the country [2]. As Mirzoeff points out [3], in this period and throughout the colonial history, foreign government functionaries claimed Congo's people were cannibals who practiced human sacrifices, judgments by poison, fetishism, slavery, polygamy, polyandry. Congo was truly considered the *Heart of Darkness* of Africa [4]. Within this context "Minkisi were important components of African resistance. The destruction of these objects was also justified as part of the eradication of 'heathen' religions and the missionary effort to spread the 'civilizing' influence of Christianity. Missionaries burned minkisi or carried them off as evidence of a paganism destroyed: military commanders captured them because they constituted elements of an opposing political force" [5]. As Mirzoeff points out [6]: "it was common for minkisi to have pieces of European cloth fixed to them, indicating the target for the spirits, or even be equipped with a gun to help the struggle against the colonizers", and again, "the minkisi were not relics of archaic religions but a means of organizing resistance to colonial culture and creating an alternative means of representing reality for the colonized."

Minkisi played a crucial role in the histories of Kongo: as perspectival constructs, they collected radically different narratives, memories, beliefs, and emotions, all woven into a reactive, complex, animated artifact. The minkisi act as the material embodiment of invisible, strong powers: imagined worlds or multiple worlds constituted by the historically situated imaginations of people or by phenomena pertaining to different levels of reality [7].

Minkisi are then imaginary landscapes, places that Michel Foucault would refer to as "heterotopia" – a place that is different from itself, on account of the plurality of readings of its events [8].

THE PILOT

Our application aims at using augmented reality technologies to collect and re-tell some of these imaginary landscapes. Augmented realities define the possibilities for reconsidering the ways in which we communicate, interact, relate, behave, including the ways in which we exchange, distribute, share, disseminate knowledge and information in the domain of physical objects. Within this scenario, the

FIG. 2: *Gestures of the banganga recorded and ready for playback directly from the nkisi*

ideas of "communicating" and "learning" have been reinterpreted by extending the spaces and tools that can be used in these practices, by attaching layers of information to physical artifacts.

The production of space [9] has been a key aspect of human activities, and in history we have repeatedly been trying to augment our immediate reality. [10]

The expansion of our ability to communicate has been compared to the unlimited extensions of our own bodies and boundaries [11]. Augmented reality and augmented spaces are not novelties in human history. Religion, magic, metaphysics and art have always provided means for augmenting the immediate material worlds of our existence.

A direct connection can be suggested from metaphysics to ICT technologies with the progressive accessibility of ubiquitous, pervasive technologies enabling the stratification of digital contents onto the analogue reality.

Augmented reality allows objects that only exist within the computer to be grafted onto the physical environment. "Ambient and distributed computing makes the physical environment responsive to changes brought about through users or other agencies. Taken to its extreme the environment appears animate, equivalent to the magic, responsive world of our childhood. Similarly, Augmented Reality recalls tales of the paranormal, of mysterious places annexed to our world." [12]

Legend acknowledges that consciousness is only partly empirical, that psychology and culture play an equal or greater role. Technologies that are comparable to Legend may become media by which values, meaning, and solidarity are transmitted from one generation to the next.

In our case we have produced an explicit materialization of this connection between metaphysical and technological domains to explore the possibilities for cultural practices, communication and knowledge transmission and dissemination.

We applied Computer Vision and Augmented Reality technologies to the minkisi to create a series of prototypal access devices that would enable the religious and belief-system contents to become accessible and locatable from the ordinary reality.

When a photo of a nkisi is taken with the camera of a smart phone or a PC, a pre-trained 3D feature recognition system scans the shape, trying to identify specific components. When these elements are eventually recognized, the system will retrieve and show content from selected sources (descriptive texts, videos, sounds from anthropological researches, art critics, interviews with banganga). Additional content is collected through a CMS (Content Management System), that can be freely used to load content and to attach this content to specific areas of the nkisi. The pilot system is composed of:

– An end-to-end hardware and software system
– An ecology of algorithms allowing the system to recognize classes of 3D patterns on the artifacts
– A CMS to allow people to select 3D patterns from the identified ones and to associate personalized digital content to each of them

The preparation of the recognition system (the selection of the 3D features to be recognized) and of the content is done with the objective of enhancing the emotional/traditional/belief-based attributes of the physical objects and, thus, contents accessible from the nkisi can take many forms including texts, videos and pictures, but also spatialized soundscapes from sacred rituals, interviews, and visual tracings of the ritual gestures performed by the banganga on the artifacts, describing a digital aura representing and making accessible the mystical/religious/philosophical domains that create the artifact's cultural and spiritual value.

TECHNOLOGY (FIG. 2)

The technological architecture designed for the augmented minkisi is thought to be implemented in 3 different forms:

– a desktop application
– a mobile application
– an interactive installation

The three forms are characterized by different constraints and opportunities.

The desktop version of the system benefits from a potentially high level of available processing power, but it suffers from the vast dishomogeneities in both software and hardware platforms that are installed on the single machines: the presence of operating systems, video cards, webcams, software drivers and other elements is only partially predictable and manageable.

Current mobile devices – and, specifically, smartphones – are more reliable and predictable for what concerns the on board hardware and software equipment, but they suffer from limited availability of processing power.

Furthermore, computer vision algorithms and applications work best when they can operate in controlled environmental conditions, with specific reference to lighting, color, stability, perspectives, and field of view.

So while, from our experience, designing systems like the ones described in this report is possible using desktop computers and mobile devices, a customized, high-performance interactive installation emerged as the best solution for the implementation of this class of systems.

In this paper we will document the interactive installation version of the proposed solution. The main architectural components of the installation are:

- the computer vision and feature recognition algorithms
- the Content Management System that allows interrelating content to 3D features
- the capture/display system

The computer vision system used for the 3D feature recognition functionalities is centered on SURF (Speeded Up Robust Features) [13] technologies. SURF is a robust image detector and descriptor presented in 2006 by Herbert Bay. SURF algorithms associate images to the description of their significant visual features (borders, color change edges, spikes, curves, textures …), expressed in a symbolic form. In the system each nkisi is processed using a SURF-centered procedure: the whole figure of the artifact as well as several of its most outstanding and specifically recognizable parts are processed under controlled, optimal lighting conditions, and the resulting symbolic descriptors of the identified (and identifying) features are stored on a database. The database is designed in a way that is optimized for a parallel search on multiple descriptors. These are the steps of the main usage scenario of the system:

1) an nkisi is placed in front of a webcam
2) the captured image of the nkisi is pre-processed and sent to the identification algorithm
3) the identification algorithm extracts features from the image sing the SURF technique, and expresses them using a descriptor
4) the descriptor is compared to the ones present in the database using a balanced b-tree search on the descriptors' contents
5) if a match is found (according to a threshold of error tolerance) the nkisi is identified
6) the identification is sent to the CMS to fetch related contents
7) the retrieved contents are sent to the visualization subsystem

The Content Management System has been implemented by customizing a standard Wordpress CMS. A plugin has been developed to relate the contents added to the CMS to specific sets of SURF feature descriptors, thus associating them to specific 3D features identifiable on the minkisi that have already been configured on the system.

The display system has been designed as a transparent projection screen to be placed between the user and the nkisi. The screen is built using a layer of thin transparent plexiglass, coated with a transparent projection surface (usually in the form of an adhesive layer to be attached to the plexiglass). A projector operates from the back of the installation, positioned at a height that minimizes field of view interferences while allowing image correction requirements due to the resulting disalignment.

In this way the information is projected onto a quasi-transparent medium that mediates the user's vision of the nkisi, creating a materialized layering of the digital content. A high-resolution, high-frame rate webcam completes the setup, performing two main functionalities:

- capture the image of the nkisi and of its position relative to the projection surface
- capture the basic dimensions of the viewer (specifically, height and offset from the plexiglass)

The information captured by the webcam is used to tune the projection mapping parameters, to optimize to a certain level of accuracy the superimposition of the digital content to the nkisi from the point of view of the main viewer (the one closer and more centrally facing the projection surface and the nkisi). The information projected is, thus, tuned specifically for the person who is most likely the main observer of the installation at a specific time.

CONCLUSIONS

Today, minkisi are exhibited in museums and massively sold to tourists looking for exotic and primitive artifacts but some banganga say you should never buy a nkisi unless you know exactly what it is. It is possible that the one for sale is useless, discharged and harmless but it is equally possible that it is still inhabited, uncontrollable by you and dangerous when not attended to properly.

As Mitchell argues: "Objects, narratives, memories, and space are woven into a complex, expanding web – each fragment of which gives meaning to all the others." [14] Our application is an attempt to visualize these astonishing powers as crystallized in temporary, situated, partial orders of realities.

It is not important if you believe in the spiritual dimensions of the minkisi or not, the crucial part of the project is that all users can have a glance at how other subjects see the same object and project their beliefs, emotions, thoughts onto them. This paper tries to open new visions, crossing the borders of sacred worlds and visualizing the multiplicity of other orders of realities, whose realm of reality always depends on different cultural, social, economic contexts.

ACKNOWLEDGEMENT

The authors wish to thank the research group at FakePress Publishing, for the possibility of implementing a truly collaborative research process and for their support in the ethnographic research and in the design of the components: Cary Hendrickson (Human Factors), Oriana Persico (Communication Sciences), Federico Ruberti (Feasibility Research).

REFERENCES

[1] WYATT MACGAFFEY, "Fetishism Revisited: Kongo Nkisi in Sociological Perspective", Africa, 47, 2 (1977): 172–185.

[2] PAUL GILROY, The Black Atlantic (London-New York: Verso, 1993).

[3] JOSEPH CONRAD, The Hearth of Darkness (1899).

[4] NICHOLAS MIRZOEFF, An Introduction to Visual Culture (London: Routledge, 1999).
[5] WYATT MACGAFFEY, Astonishment and Power (Washington: National Museum of African Art, 1993): 33.
[6] NICHOLAS MIRZOEFF, An Introduction to Visual Culture, 145–146.
[7] ARJUN APPADURAI, “Disjuncture and Difference in the Global Cultural Economy” Theory, Culture Society 7, no. 2 (1990): 295–310.
[8] IN ANDREW BALLANTYNE, What is Architecture? (London: Routledge, 2002).
[9] HENRI LEFEBVRE,.The Production of Space (Hoboken, NJ, USA: Wiley-Blackwell, 1991).
[10] ALESSANDRO AURIGI, and FIORELLA DE CINDIO. Augmented urban spaces: articulating the physical and electronic city (Farnham, UK: Ashgate Publishing, 2008).
[11] ROBERT MITCHELL, and PHILLIP THURTLE. Data made flesh: embodying information (London, UK: Routledge, 2004).
[12] ROY ASCOTT, Art, technology, consciousness: mind@large (Bristol, UK: Intellect Books, 2000).
[13] HERBERT BAY, ANDREAS ESS, TINNE TUYTELAARS, LUC VAN GOOL “SURF: Speeded Up Robust Features”, Computer Vision and Image Understanding (CVIU), Vol. 110, No. 3, pp. 346–359, 2008.
[14] WILLIAM JOHN MITCHELI, Placing Words (Cambridge Mass.: MIT Press, 2005).

Eiko Ikegami

PROFESSOR AND CHAIR DEPARTMENT OF SOCIOLOGY GRADUATE FACULTY, NEW SCHOOL FOR SOCIAL RESEARCH, NEW YORK, USA
eiko.ikegami@gmail.com

Edward Colin Ruggero

DEPARTMENT OF SOCIOLOGY, THE NEW SCHOOL FOR SOCIAL RESEARCH, NEW YORK, USA
ecolinr@gmail.com

SOCIAL AND POLITICAL ACTIVISM IN SECOND LIFE

INTRODUCTION

Alexis de Tocqueville, famed observer of early 19th-century America, often commented on the flourishing associational life he witnessed during his travels through the young republic. "Americans of all ages, all stations in life, and all types of dispositions are forever forming associations. There are not only commercial and industrial associations in which all take part, but others of a thousand different types – religious, moral, serious, futile, very general and very limited, immensely large and very minute" (Tocqueville 1969, pp. 513–14). Tocqueville was convinced this associational life was one of the most important cultural foundations for its then envied democracy.

Though Tocqueville's setting was early America, the spontaneous rise of associational life in new social environments can manifest in various historical and cultural contexts (Ikegami 2005). Over the past two decades, the dramatic growth of the Internet has inspired numerous inquires into the nature of association found there.

Within this new field of inquiry, one of the most intriguing developments has been the evolution of massive, immersive, and persistent 3D virtual worlds, such as those found in the *Second Life*, *World of Warcraft* or *EveOnline* platforms (Bainbridge 2010a, 2010b; Boellstorff 2008; Castronova 2007). Within these virtual worlds, or "inworld", users use avatars to navigate the environment, interact with other avatars, and innumerable other activities. Importantly, avatars are more than a mechanical necessity; customizable 3D avatars extend users' sense of existence into the virtual world, offering both physical immersion and a sense of co-presence during interactions with others (Gordon & Koo 2008; Bartle 2006). Nonetheless, voluntary associational activities of avatars are still to date understudied.

In a spirit similar to Tocqueville's exploration of early America, our research team of digital ethnographers entered the new (virtual) social world of *Second Life* (SL). Launched in 2003 by the Linden Labs Corporation, SL boasts over nineteen million users and, like other virtual worlds, it is highly immersive and malleable. However, unlike some virtual worlds, SL is not a game, there's no way to "win," and no universal theme like *World of Warcraft*'s medieval-fantasy setting. Consequently, SL initially lacked the built-in "social structure" these elements provide. However, during beta testing, developers added a "group" function, allowing previously atomized avatars to "affiliate around a common interest and communicate with each other on a collective instant message channel" (Au 2008, pp. 40–41). As membership increased, this function became the technical basis for a spontaneous rise of associational life that now forms the main feature of SL.

Our team has encountered an amazingly vibrant array of associations "of a thousand different types," as Tocqueville might say. Various spiritual and religious associations, like the Second Life Synagogue, Brahma yoga and Meditation, or Buddha Center, replicate traditional rituals in new styles, and encourage education. Groups like Cape Able and Virtual Ability Incorporated offer community and support for SL users with real life disabilities. Dublin Virtually Live and Flanagan's Irish Pub recreate the feel of an Irish bar, where avatars drink, chat, and dance, but also provide hubs for sociability. These are only a few examples; users' motivations for entering SL are extremely diverse as the variety of associational forms suggests.

ACTIVISM IN SECOND LIFE

One area our team has examined closely is social and political activism in SL, or virtual world activism (VWA). It too features an amazing array of associations, conservative and liberal, radical and authoritarian, addressing many different issues. Thus far, our observations have focused primarily on leftist and left-radical groups. Table 1 provides an overview of some of these groups. **(FIG. 1)**

After some initial observations, we began to notice important differences in group behavior, a sort of continuum of SL activism. At one end are groups that approach SL as they might the 2D Internet. Their activities tend to be limited to recruitment and periodic, unidirectional information sharing and there is little opportunity for group interaction. For example, though Amnesty International maintains a large building full of information on its work and ways to donate, the place feels empty and static, like a 3D kiosk. Importantly, the group rarely organizes inworld events of its own.

At the other end are groups that hold regular meetings, organize and host events, and engage in extensive communication with members. For example, since their founding in 2006, the Second Life Left Unity Feminist Network (SLLUFN) and its parent group, the SLLU, have developed a rich associational network of over 400 members. In addition to weekly meetings, these groups organize speaking events, dances, protests, parties, discussion forums, performances, and more.

ACTIVISM AND THE INTERNET

The use of the Internet for social and political activism is a widely studied phenomenon, often referred to as cyberactivism (Bonneau 2010; Breindl 2010; Van Laer and Van Aelst 2010; Stein 2009; Rolfe 2005). However, studies of cyberactivism focus almost exclusively on the 2D Internet; when virtual worlds are mentioned, they are conflated with

Group Name	Membership	Group Charter (Sourced from Profile)	Observed Activities
Beehive Islands Collective	60+	"Establish Principles of Sustainability for Life on Earth and in the Seas and in the Air and Bring Them into Action."	Environmentally focused education events, sustainable energy model displays, hosts Independent Media Center, spiritual events, music performance, semi-regular group communication.
SLLU	400+	"The SLLU seeks creative, non violent means to foster revolutionary social dialogue. We oppose capitalism, as well as racism and sexism as a part of capitalism…SLLU is part of a world wide left unity movement in SL...We are a democratic collective."	Weekly meetings, open forum discussions, protest/demonstrations, parties, dances, press releases, fundraising, organizing inworld coalitions, communication of news, development of intellectual resources, very frequent group communication.
SLLUFN	140+	"'Never doubt that a small group of thoughtful, committed citizens can change the world. In fact, it is the only thing that ever has.' - Margaret Mead"	Weekly meetings, open forum discussions, protest/demonstrations, parties, dances, press releases, creation of intellectual resources, creative fundraising (performances, contests, auctions), very frequent group communication.
Commonwealth	500+	"The Commonwealth Islands are home to a progressive activist community…includes nearly 500 individual activists, academics, wonks and geeks who may or may not be affiliated with the resident organizations."	Hosts real life non-profit organizations, informational exhibits and links at kisok clusters. Rare meetings, events and exhibits. Open, public spaces for recreation. Semi-regular group communication.
SLDM	150+	"To build a broad platform to work for user rights and civil liberties in Second Life…to work for (direct) democratic change and control to further and enable User/Resident rights and governance (self rule) in the Second Life world."	Weekly meetings, press releases, communication of news, development of intellectual resources, very frequent group communication.
Amnesty International	300+	"Amnesty's global mission is rooted in a fundamental commitment to the rights, dignity, and well-being of every person on Earth."	Information distribution, sparse speaking events, petitioning, fundraising, infrequent communication.
Four Bridges	200+	"Four Bridges is a virtual sustainable global community model founded on the four principles of respect for nature, universal human rights, economic and social justice, and a culture of peace."	Structured, participatory governance board, parties, dances, creation of intellectual resources, creative fundraising (performances, contests, auctions, fairs), very frequent group communication. Hosts numerous other groups.
Etopia Island	200+	"Etopia Community - an educational Environmental Eco Village with examples of Sustainable Development, Renewable Energy, Organic Living & Authentic Community. Enjoy our green spaces, ride our train & gondola, learn about solar and wind power, alternative energy and transportation, cohousing, non profits in SL, aquaculture, community gardens and more!"	Etopia Island is interesting because it is entirely focused on SL demonstrations of RL technologies and 'green choices,' yet, it is not merely a front and it seems to be a place where people interact, make friends, etc. This makes it somewhat unqiue among these environmental groups, which are mostly just fronts for RL groups or campaigns

Table 1: Selection of Second Life Social and Political Activism Groups Observed.

FIG. 1

2D forms. Further, cyberactivism discussions treat activists' Internet use as binary, that is, as either offline or online, implying that the two worlds can be treated as bounded wholes, ontologically separate from one another (Blodgett 2009).

Our ongoing research indicates that the VWA phenomenon does not fit within this cyberactivism paradigm. Here, drawing on our experience with groups mentioned above, we will elaborate on this incongruity, focusing on two areas:

1) the online/offline polarization of activist behavior; and,
2) the supposed lack of possibility for emotional depth in cyberactivism.

ONLINE/OFFLINE POLARIZATION

As noted previously, most discussions of cyberactivism treat actors' behavior as binary, implying that the offline and online worlds can be ontologically separated (Blodgett 2009). Our research, however, suggests otherwise.

Consider the example of the SLLUFN. This group is involved in a number of campaigns, focusing on issues endemic to Second Life and issues grounded in real life. They have organized inworld fundraising events for real life girls' schools in Afghanistan and have provoked authoritative action on issues of "virtual" child pornography in SL. These activities "fit well" within the existing discourse. The online and offline dimensions of the actions are clear and distinct: inworld fundraising and surveillance lead to real world press coverage, changes in law, schools, etc. Further, actions and impacts are quantifiable, allowing for comparison with other forms of cyberactivism.

However, there are activities that do not "fit" quite as well. The SLLUFN recently completed a document called the "FAQ on Representations of Violence in SL", part of a "Newbie Woman's SL Survival Kit". These texts are meant to educate and promote discussion of inworld gender

violence. Or, consider a November 2009 protest at a SL sim called Hard Alley, a roleplay sex sim specializing in themes of rape and physical abuse. Nearly fifty protesters marched in Hard Alley's central square, carrying large signs, dressed as pieces of meat, and chanting slogans. Importantly, the protest's performative aspect was a conscious choice of nonviolent demonstration over direct attack and harassment. Inworld attack and harassment, or "griefing" as it is called in SL, is both relatively common and easy to do. However, the SLLUFN sought to frame its behavior as distinct from the petty violence of griefing, clearly noted in a blog post about the protest: "We were not there to 'attack' the sim, nor to grief it or its users. We did not spam visitors here, nor abuse them individually. We are protesters, not griefers" (SLLUFN 2009).

This distinction is important. The SLLUFN was not attempting to vandalize the Hard Alley sim or harass its visitors. The central aims of both the protest and the FAQ relate to psychological and solidarity effects that straddle the virtual/real divide. They seek to address issues of gender violence in both spheres, targeting the psychology of users by addressing inworld behavior. Indeed, interviews with activists indicate they do not view these spheres as separate; SL is simply an extension of their "first life" and their activism is similarly fluid because, in words of the SLLUFN itself, "What happens here does matter in real life" (SLLUFN 2010). However, this behavior does not fit well within existing cyberprotest paradigms.

TRUST, BONDS, AND SELF

A second recurring argument lobbed at cyberactivism is that Internet-mediated communication cannot foster the strong emotional bonds necessary for collective action (Stein 2009; Wall 2007; Clark and Thenmudo 2006; Diani 2000). However, our research suggests the SL experience contains social mechanisms for fostering such social ties. Across all of the SL activist groups observed, we have seen mechanisms of deep, meaningful social interaction. It seems best to let a few examples elaborate this point.

First, the problem of trust. A major concern for many groups we observed is group infiltration by users from opposing ideological positions. Consequently, our early interactions with individuals and groups were somewhat uncommunicative and brief. However, over time, this changed, avatars spoke more personally and we were welcomed to help organize activities and projects. One researcher participated in editing the SLLUFN's Virtual Rape FAQ discussed above, collecting input from group members and working with others to produce the final document.

While the depth of this tacit trust is difficult to determine, what is important is the existence of mechanisms for developing trust. Based on our observations, these mechanisms include: regular presence in SL; semi-regular attendance and participation in meetings and group-organized events; and engagement with SL as a virtual world (customizing your avatar, using SL slang, observing SL customs, etc.). Thus, our research suggests that within SL activist communities, there are numerous ways to develop trust, which transform a new member from a "stranger" to a community member, something that is supposedly lacking in 2D cyberactivism. Usually, trustworthy identities of avatars-activists emerge not as a response to preexisting, inherent qualities of individuals. Rather, these identities gradually emerge through a process of participating in various events in SL, engaging in repeated social interactions.

We also observed evidence of deep emotional bonds between some group members, a result of accumulated trust and familiarity. At a dance hosted by a group called the Beehive Collective, a huddled group chatted about an absent colleague; in the middle of the conversation, they began playfully chanting his name, joking that he would hear them and appear. This is not an uncommon situation; the unexpected absence of an avatar is often met with expressions of yearning and lament. Additionally, in many situations, avatars openly inquire about each other's lives, asking about family, work, school, hobbies and, significantly, health. During an encounter between friends at the anniversary party for the SLLU, one avatar expressed they were having "some really hard times, maybe depression". A friend led them to a secluded corner of the party where they sat with one another for over an hour, their avatars appearing engaged in deep discussion.

Finally, there is the claim that individuals experience a "loss of self" when moving from 3D reality into a 2D cyberspace, furthering hampering social ties (Neumayer and Raffl 2008; Wall 2007). However, interactions within SL – speaking, dancing, and playing – mirror real life interactions, a process that actually develops users' sense of self (Moore et al 2009; Gordon and Koo 2008; Ducheneaut et al 2007; Steinkuehler and Williams 2006).

In our research, we encountered numerous examples of this development-of-self phenomenon. A conversation with the leader of a group called Four Bridges, an umbrella leftist group founded in 2008 which houses many smaller groups and causes, stands out as particularly memorable. As a newly divorced single mother, she was initially drawn to SL because it offered a social life and community that she was lacking. She developed a friendship with an SL musician who donated his inworld tips to Amnesty International's SL entity, her first introduction to SL's social and political activism. Over time, her participation and engagement with multiple groups increased and she began to take on organizing responsibilities, something she had never done in real life. This led to her current position as leader of Four Bridges, likely the largest and most ideologically diverse activist group in SL. Further, she said the skills and confidence she gained in SL have carried over into the real world, and she has assumed similar roles in real life organizations. She explicitly cites SL as responsible for this personal transformation and for the strength she brings to real life organizing now.

CONCLUSIONS

This paper has discussed a few ways in which social and political activism in Second Life runs counter to prominent characterizations of cyberactivism, with which it is usually conflated. Our observations indicate that VWA may not be governed by the same virtual/real divide that 2D forms of cyberactivism may be. Further, the implication that Internet-mediated interactions cannot foster the emotional bonds needed for social movement virility appears untrue in the case of VWA. These findings suggest the need for a serious reevaluation of the way in which scholars approach cyberactivism. By further studying this emotionally engaged

and embodied means of cyberactivism, we may be able to articulate not only this new form of associational life, but also the complexity of the relationship between self, identity and social interaction revealed in our study of virtuality.

ACKNOWLEDGEMENT

This paper is based upon work supported by the National Science Foundation under (Grant No. # 0942997,PI: Eiko Ikegami). Any opinions and findings expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

BIBLIOGRAPHY

AU, WJ 2008, The Making of Second Life: Notes from the New World, Collins, New York.

BAINBRIDGE, SW 2010a, The Warcraft Civilization: Social Science in a Virtual World, MIT Press, Cambridge, MA.

BAINBRIDGE, SW ed. 2010b, Online Worlds: Convergence of the Real and the Virtual, Springer, New York.

BARLOW, JP 1996, "A Declaration of Independence of Cyberspace", viewed June 30 2010 <https://projects.eff.org/~barlow/Declaration-Final.html>.

BARTLE, R 2006, Virtual Worldliness, in Balkin, J. & Noveck, B., (eds.) The State of Play: Law, Games, and Virtual Worlds, 2006. New York University Press, pp. 31–54.

BOELLSTORFF, T 2008, Coming of Age in Second Life, Princeton University Press, Princeton.

BLODGETT, B 2009, "And the Ringleaders Were Banned: An Examination of Protest in Virtual Worlds", Proceedings of the Fourth International Conference on Communities and Technologies, pp. 135–144.

BONNEAU, J 2010, "Digital immolation: new directions for online protest", (unpublished), viewed June 15 2010 <http://www.cl.cam.ac.uk/~jcb82/doc/spw2010_protest_draft.pdf.>

BREINDL, Y 2010, "Critique of the Democratic Potentials of the Internet: A Review of Current Theory and Practice", tripleC-Cognition, 8,1, pp. 43–59.

CASTRONOVA, E 2007, Exodus to the Virtual World: How Online Fun is Changing Reality, Palgrave Macmillan, New York.

Collins, R 2004, Interaction Ritual Chains, Princeton University Press, Princeton.

CLARK, J. & THEMUDO, N 2006, "Linking the Web and the Street: Internet-based 'Dotcauses' and the 'Anti-globalization' Movement", World Development, 34, 1, pp. 50–74.

DIANI, M 2000, "Social Movement Networks Virtual and Real", Information, Communication & Society, 3, 3, pp. 386–401.

DUCHENEAUT, N., MOORE, R. & NICKELL, E 2007, "Virtual 'Third Places': A Case Study of Sociability in Massively Multiplayer Games", Computer Supported Cooperative Work (CSCW), 16, 1, pp. 129–166.

GORDON, E. & KOO, G 2008, "Placeworlds: Using Virtual Worlds to Foster Civic Engagement", Space and Culture, 11, 3, p. 204.

Ikegami, E 2005, Bonds of Civility: Aesthetic Networks and the Political Origins of Japanese Culture, Cambridge University Press, Cambridge

IKEGAMI, E. and P. HUT 2008, "Avatars are for Real: Virtual Communities and Public Spheres", Virtual Worlds Research. 1, 1.

MOORE, R., HANKINSON GATHMAN, E. & DUCHENNEAUT, N 2009, "From 3D Space to Third Place: The Social Life of Small Virtual Spaces", Human Organization, 68, 2, pp. 230–240.

ROLFE, B 2005, "Building an Electronic Repertoire of Contention", Social Movement Studies, 4, 1, pp. 65–74.

SLLUFN 2009, "For Immediate Release', viewed June 30 2010 <http://slleftunity.blogspot.com/2009/11/for-immediate-release.html>.

SLLUFN 2010, "Representations of Violence in SL: FAQ and Some Answers", viewed June 30 2010 <http://feministos.wetpaint.com/page/Representations+of+Violence+in+SL%3A++FAQ+and+Some+Answers. >.

STEIN, L 2009, "Social Movement Web Use in Theory and Practice: a Content Analysis of US Movement Websites", New Media & Society, 11, 5, pp. 749–771.

STEINKUEHLER, C 2005, "The New Third Place: Massively Multiplayer Online Gaming in American Youth Culture", Tidskrift för lärarutbildning och forskning nr 3 2005 årgång 12, pp. 17.

STEINKUEHLER, C. & WILLIAMS, D 2006, "Where Everybody Knows Your (Screen) Name: Online Games as 'Third Places'", Journal of Computer Mediated Communication, 11, 4, pp. 885–909.

TOCQUEVILLE, A 1969. Democracy in America (J.P. Mayer, ed.; George Lawrence, trans.) Anchor Books, New York.

VAN LAER, J. & VAN AELST, p. 2010, "Cyber-protest and Civil Society: the Internet and Action Repertoires in Social Movements", in Yvonne Jewkes and Majid Yar (eds.) Handbook of Internet Crime, Willan Publishing, London, pp. 230–254.

WALDER, A 2009, "Political Sociology and Social Movements", Annual Review of Sociology, 35, pp. 393–412.

WALL, M 2007, "Social Movements and Email: Expressions of Online identity in the Globalization Protests", New Media & Society, 9, 2, pp. 258.

Margarete Jahrmann

UNIVERSITY OF APPLIED ARTS VIENNA/
UNIVERSITY OF ARTS ZURICH, AUSTRIA
THE PLANETARY COLLEGIUM, CAiiA
margarete.jahrmann@zhdk.ch
www.ludic-society.net

LUDIC CHINDOGUS AS EROTIC TOYS
Pleasure, Play, and Politics Beyond Materialism

INTRODUCTION AND OVERVIEW

Our contemporary society appears to be heavily determined by ubiquitous technologies and smart toys with playful interfaces, including so-called smartifacts. Smartifact [1] is a term first coined by researcher Harry Vertelney at Apple Computers Corporation in the 1980s to refer to new forms of software-based agents. Smartifact is used in this article to connote the fictional concepts, as described by writers of the Cyberpunk genre, as Bruce Sterling (2005). According to observations of developments of consumer technologies over the last decade, the material affordances, as Miller (2006) describes it in the second wave of material studies, of these objects increasingly influenced the social design of urban spaces, private life, and the role of the self. Despite the factual presence of technological objects, critical theory in interaction design studies barely questions this technological materiality. The actual discourse mostly ignores the political brisance of the influence of technological objects on individual and social life. By contrast, game and play cultures offer a significant political commentary on these kinds of developments. Since the late 1990s, the new genre of game art started to mirror these cultures. This newly constituted field of artistic intervention embraced the increasing presence of playful interfaces, although it ignored its inherent political potentials in activism and social design. However, new forms of critical intervention in role-play, creative work and text began to emerge from the play with technological gadgetry in everyday life. In particular, this critical creative work, found in the deviant fields between irony and subversion in activist and arts Avant-garde provides evidences for the development of the idea of play politics, elaborated as ironic Playsure Politics.

This paper and the supporting research practice aims to provide models for further interventions into the conditions of technological artefacts, in order to develop a political consciousness about the master servant relation to machines in the internal dynamic of the player. In addition, it will suggest a theoretical framework, Ludics, for the field through the integration of anthropological concepts of play, pleasure and enjoyment in relation to practical examples of subtle erotic forces in play with absurd machines. The critical analysis of technological objects serves as a catalyst for a new socio-political theory of art and playfulness as a research question of urgency in contemporary ubiquitous computing worlds. The argument is elaborated through the following keyterms of Ludic practices!

1. KEYTERMS OF LUDICS PRACTICE

Ludics as practice-led research aims to offer a model of playfulness studies, which overcomes the lack of pleasure, politics and material consciousness in games studies of the last decade, as introduced by Juul (2003), Frasca (2001) or Pias (2000). With a survey of the dominant understanding of playfulness in the current electronic culture, it theoretically grounds subversive practices in play as political activism of everyday life. It is a model that subjects this to a critical evaluation relative to:

1.) A critical assessment of playfulness as distinct from games studies in historic and contemporary theories and its synthesis as a particular dimension of political agency.
2.) The classification of technological materiality by an in-depth survey of cases of the anthropomorphization of technological objects and the consequential introduction of the new category of semi-synthetic play.
3.) Ubiquitous play as condition of social networks, based on recent activist evidences and examples of contemporary activist arts.
4.) A multifaceted evaluation of affordances of play in smartifacts and "Ludic Interfaces", elaborated in a comparative analysis of proto-computational historic artefacts and the introduction of a material consciousness.
5.) Political subversion and synthesis in arts, presented as a theoretical narrative of cases of subtle erotic in role-play as precedents of contemporary play with the self in networked "Con-Dividualities".
6.) Historic evidences of Ludic Interfaces and political role-play; the case studies show the power of playfulness as a consciousness strategy, when it is synthesised with theoretical concepts for a new understanding of politics in everyday life and technologies.
7.) Case studies of the author's art work have contributed to the emergence of a new methodology of playful intervention and agency, which is coined as "Ludics".

FIG. 1. LUDIC SOCIETY CLUB BADGE

The practical and theoretical solution, coined as Ludics emerged as methodological platform from practice-led research in the art works of the author. This framework identifies art practice as a discrete field of research, and thus introduces a classification of methods according to a theoretical model of Ludics. This consists of the categories of conceived, perceived, and lived agency, which support

a methodological framework of play politics, agency, and mutual information of theory and practice. Ludics aims to provide a conceptually informed toolbox of strategic interventions, capable of generating a new form of practical research. Ludics in its full potential can be understood as a new concept, which was strategically introduced by the invention of the Ludic Society as arts project and playful research affiliation in 2006.

2. LUDIC CHINDOGU

"Chindogu" describes a state of mind that is based on pleasure, attraction and amusement in regard to technological artefacts. Kawakami (1995) described the philosophy of Chindogus in Japan as a subversive practice in order to reach a particular consciousness in regards to useless objects. In the Western hemisphere Critical Arts Ensemble (1996) published fake advertisements of Useless Technologies. This addresses a particular kind of absurd technological object, which becomes a toy for amusement and joy, only by changing the attitude towards the object's materiality. This particular pleasure gained by the existence of the artefact contains a dimension of subversive attraction, which is very much bound to the arts practice of the author. Moreover, the author's engagement with certain aspects of computer technologies, interface cultures, network communities, online environments and play culture over the last decade integrate these two dimensions in a new form of Ludic Chindogus, called New Bachelor Machines, in which philosophy and art practice converge.
In Ten Tenets of Chindogu Kawakami refers to the real satire aspect of analogue gadget industries. He argues:

> *"Every Chindogu is an almost useless object, but not every almost useless object is a Chindogu. In order to transcend the realms of the merely almost useless, and join the ranks of the really almost useless, certain vital criteria must be met. It is these criteria, a set of ten vital tenets that define the gentle art and philosophy of Chindogu."(Kawakami, 1995: 10)*

Joy and pleasure are evoked by their appearance, which for them exists. It is obvious that their use is not the main target of invention. They are symbolic artefacts, toys between arts and amusement in a social configuration, which ironically mirrors associations, establishing power structures. Despite this, technological and other Chindogus are discussed and collected in playful societies. The association around the investigation of Chindogus expresses a particular interest in the gadgets used in everyday life for the deliberation of amusement. As part of this amusement of objects, a word play between "thing" and "penis" can be identified in the term "Chindogu". The association reflects on erotic dimensions[2]. The inherent dimension of anarchy, found in sexual enjoyment combined with uselessness, is also expressed in the Chindogu manifesto: "Inherent in every Chindogu is the spirit of anarchy. Chindogu are man-made objects that have broken free from the chains of usefulness" (Kawakami, 1995: 14). The aspect of freedom merges in the useless object with the Jouissance of erotic attraction. In the case of the Chindogu, as described by Kawakami, the gaze on useless objects follows a path of "fetishisation", as an ironic arts oriented project. Nevertheless, it uses means of expressing politics as the

FIG. 1. *Ludic Society Club Badge. Homage to "pataphysics"*

FIG. 2. *GoApe Chindogu, New Bachelor Machine by Max Moswitzer/Margarete Jahrmann, ARCO, Madrid 2007*

FIG. 3. *Jouissance Corsage – Virtually transparent/Mediology Performance, Margarete Jahrmann collab. Boudoir&Who Killed Bambi, Volkstheater Wien, November 2009*

manifesto. Ten Tenets of Chindogu is written in this style. It claims that, similarly, in sports Chindogus are not only collected, but also produced. In paragraph two of the manifesto it states: "A Chindogu must exist, you are not allowed to use a Chindogu, but it must be made" (Kawakami 1995: 12). The main difference of the gadget of everyday life is, according to the manifesto, found in its intentional uselessness when creating the object. Uselessness is defined as a joyful quality in analogue technological gadgetry, according to paragraph one of the manifesto. This means that when looking at a device you cannot imagine its use at the first glance, but enjoy its aesthetic beauty of absurdity. This attraction of uselessness follows an attitude of enjoyment in relation to devices and the machines of technological cultures [3]. Similar to an erotic toy or a fetish, the joy of the existence of the object replaces its use and function.

FIG. 2. GoApe CHINDOGU

An erotic pleasure gained by a look on hermetic machines is expressed as experience of technologically determined life in Western industrial culture. The understanding of Jouissance as dimension of play is supported by the conception of the absurd artefact as tool for critical enjoyment by play. The element of pleasure by the presence of uselessness gives the individual player the ability to feel free to critically take position. By subversion of functionality, certain useless objects offer a solution to circumvent the materialist approach of capitalist society. In a simple role-play the master-servant, relation between the object and the subject is switched. This shift enables a more profound political activism that goes beyond pre-defined boundaries of subject-object relationships. Enjoyment and amusement, caused by the absurdity of technological objects of everyday life, are identified as key element in agency. The Chindogu is identified in this analysis as crucial vehicle of Jouissance practices. This argument is grounded on a literature survey about useless objects of the 20th Century.

Most importantly, the concept of Chindogu can be used to introduce uselessness and erotic attraction to technological fetish objects connected to play, as a subversive quality to critique hegemonic power conditions. In the technological dominance by the production chain of objects, the idea supports the development of an European Chindogu with a clear political interest, in contrast to the Japanese understanding of pure amusement through joy and erotic attraction. Apart from a recent hype based on a view on the Asian gadget, simultaneously to the rise of the concept in Japan, in 1995, the American artists group Critical Art Ensemble spoke about The *Technology Of Uselessness*, addressing an activist program against technological dominance by publishing newspaper advertisements about useless technologies. The arts activist argued:

> *"The expectation that technology will one day exist as pure utility is an assumption that frequently surfaces in collective thought on the development of society and social relations. […] Having once left the production table, the technology that lives the godly life of state-of-the-art uselessness has no further interaction with humans as users or as inventors; rather, humans serve only as a means to maintain its uselessness. The location of the most complex pure technology is no mystery. Deep in the core of the war machine!" (Critical Art Ensemble, 1994: 72)*

This is juxtaposed with another radical position on Jouissance and uselessness, which is taken from contemporary European cultural history of political scholars such as the Viennese philosopher Robert Pfaller (2003). He coined the term Interpassivity (Pfaller 2000: 3) to describe the uselessness of the imperative interactions of certain technological interfaces relating it to the erotic attraction of technological objects. Interpassive consumption machines and the placeholder function of technology for enjoyment form the anchor points of his analysis The subtitle of his study Distributed Enjoyment, refers to the delegation of Jouissance in objects, which substitute sublime sexuality into technologies. The motive of substitution and enjoyment is further elaborated in Pfaller's declaration of a rising emphasis on pleasure reached by technology's cultural domination as a fetishisation process (Pfaller, 2002: 160). By a critical analysis of the phenomenon of Chindogu, a philosophical strand of playfulness and enjoyment can be touched, which is – again not surprisingly – embracing the dimension, sexual enjoyment and politics, in playful Jouissance.

3. JOUISSANCE

The important third dimension of play is affective and described as the concept of "Jouissance" [4].

FIG. 3. JOUISSANCE CORSAGE

This section will define the theoretical concept of Jouissance as subversion through the erotic dimension in play. Jouissance as political idea is informed by the origin French jouir or to enjoy. In order to introduce the conceptual entanglement of play and the Jouissance meaning "French for pleasure", the trust of playfulness as a creative drive is used to identify the agency potential of concept for a new form of play politics.

According to the Oxford English Dictionary (2009) Jouissance is defined as "The possession and use of something affording advantage in the sense of enjoyment". Lacan introduced Jouissance in his critique of psychoanalysis as a theoretical concept. In his famous Seminars XX at the University of Paris, Lacan (1972) suggested the use of the term for a sophisticated form of pleasure, which was informed by the relationship between objects, subjects and the creation and shifts between different aspects of enjoyment and the desire of the self with its complex appearances. By analysing this form of joy, Lacan constantly refers to Hegelian dialectics of 'a master and a servant' relationship. The "master and servant relationship" as described in the theoretical object, is produced out of the enjoyed or obsessive relationship between subject and object. The Lacanian desire for "plus-de-jouir" (Žižek 1992: 82) can be understood as a wish for more enjoyment through play, which is tied to the object. Lacan suggested that the object of desire as an "objet petit a" (Pfaller 1997: 27), constitutes enjoyment, which nowadays particularly includes the technological object. This is a reminder of the frame of technological materiality, where the bond to materiality is substituted with the surplus of enjoyment by play. According to the literature survey, free play appears as associated with Jouissance, desire and pleasure. Drawing on the idea of free play, this divide can be unmasked as pure construction of hegemonic suppression. The thinking framework of pleasure and play is based on concrete ideas

of structural processes in society as dimensions of aesthetic education and enjoyment. In this argument, the antithesis of reason and sensuality are dissolved in a practice of identification with a political driven desire for "freeplay". Derrida (1978) introduces the idea of freeplay:

> *"And, as always, coherence in contradiction expresses the force of a desire. The concept of centred structure is in fact the concept of a free play based on a fundamental ground, a free play, which is constituted upon a fundamental immobility and a reassuring certitude, which is itself beyond the reach of the freeplay." (Derrida, 1978: 32)*

This section's observations of a pragmatic real politics of play and enjoyment in network technologies are supported by an analysis of the Jouissance concept by the political philosopher Slavoj Žižek (2005), who newly interprets and draws on Lacan. He discusses a conscious form of enjoyment in contemporary real politics. This theory emphasises the pleasures of popular culture and popularity, particularly in how Žižek declares joy and sexual pleasure as political. According to Žižek, the "other" and "violation of constraints" and "limitations" take an important role in Jouissance. Enjoyment becomes paradoxical if it is combined with the necessary transgression or violation of constraints. Žižek talks about the obscenity of Jouissance, emphasising the concern of fetish theories in relation to sovereignty. In that sense, he approaches the politics of Jouissance masked in popular culture. The force of the desire for freeplay opens up the discourse into political efficacy. Accordingly, free play can be identified as the key element in understanding the mental aspects of play and Jouissance as crucial for political agency. This section considers an idea of enjoyment in play for political aims. It draws from a popular orientation of a political theory on enjoyment, also towards a critical dimension of popular play in the "Funware" of present social network technologies.

In present times, comparably, smart objects and multiple selves infiltrate popular culture, as the following supporting evidence in art activism's subtle enjoyments of play with the self will demonstrate. Corresponding to the observations of political role-play in activism, art will be presented in the last section. Accordingly, a literature survey of cultural studies scholars such as Žižek (1992) or Kristeva (1984) suggests that the shift to subjectivity, identity and playfully taken roles for political agency is closely tied to material affordances of contemporary technological materiality. However, it does go beyond its constraints in terms of mental effects. Playful arts practice, as one of the few remaining kinds of self-determined work, is identified in this section as a particular form of enjoyment, based on contemporary concepts of obsession and Jouissance. Jouissance is useful as technical term from political theories to emphasise the quality of enjoyment and erotic attraction in the agency dimension of play, related to desire as driving force for political agency.

4. PLAYSURE POLITICS

In this key term of the paper, Playsure Politics is understood as erotic pleasure in play caused by the materiality of technological objects, which appear increasingly useless, according to market mechanisms. This directs the focus towards the aspects and relevance of politically conscious subversive erotic joy and pleasure. In short, Jouissance is related to the immaterial qualities of attraction regarding the technological object.

Politics is historically up to date with the discourses of political theories considered as antipode to play. This angle supports the bridge between play and politics through historical examples in the materiality and cultural theories of politics and agency, as a politics of play. In a survey of historical sources of a political use of playfulness, combined with an analysis of the current practices of play and the self in art activism, this relation extends the analysis into the mental conditioning and quality of playfulness in the player. This is where the concept of Jouissance, political conscious enjoyment as a subversive agency, informs a politics of play. Evidence of play and joyful activism exemplify the connection of joy and politics, according to a theoretical clarification of the Jouissance concept in relation to play. According to particular practices in electronic and networked life, the play with Chindogus includes the absurd technological gadgets of everyday life. The effects and strategies of agency by play developed in these activist plays can be subsumed under the term 'Playsure Politics'. Things in society as constituting elements of thing politics, serve as inspiration for the suggestion of this paper, which is the idea of a politics of "playthings". The concept will draw on three categories of Latour:

> *"a- politics is no longer limited to humans and incorporates the many issues to which they are attached; b- objects become things, that is, when matters of fact give way to their complicated entanglements and become matters of concern; c- assembling is no longer done under the already existing globe or dome of some earlier tradition of building virtual parliaments." (Latour, 2005: 80)*

This listing opens possible comparisons to technology and synthetic objects in the context of contemporary play cultures. In view of that, it can be said that objects become things, in the moment when their complex relations replace facts. If thing politics is as well regarded in a relational way, it brings efficacies of things and play into the field of view. This perspective directly results from a shift of focus from an understanding of politics as intentionally organised agency towards an experience of politics as constant intervention inherent to the affordances of technological things. The new contemporary form of ubiquity enforces this dimension of political agency, from nation states towards conceptual forms of social live. By acceptance of the political reality and social efficacy of things, technological objects and play are put to centre stage of a material consciousness and the artist as activist role-player.

FIG. 4. WEB 2.0 SUICIDE MACHINE BY MODDR (2010)

In reference to the description of the role of the artist as an activist player in the media, the 1990s genre of net art can be compared to actual playful arts practices in game arts

and interventionist fine arts. In very recent forms of art such as Web 2.0, similarities can be observed towards interventions in real-life social systems and in activist role-playing. According to observations of role-playing in popular electronic social network applications, a subversive dimension of role-play activism can be observed in Web 2.0 (the participatory form of the Web on social platforms). Critical but joyful art can be increasingly found in these platforms, which represent a contemporary form of role-playing from the perspective of this section. For example, the ironic *Web 2.0 Suicide Machine* of the art group moddr (2010) exploits the enjoyment of destruction and intervention of big company structures in social web services. The service deletes Web 2.0 individual accounts and calls this script based action suicide of the online self. It draws its brisance from the relational structure of standardised social online environments and the double bind of such art work. It only gains content if it is communicated through further reporting in the realm of the mass media. In this case, play and pleasure, the role-play of the artist as liberator from the suppression of big companies of social intercourse merge against capitalisation of friendship and love. This does not mean that the artists who created the work deleted their appearance from the social web or did not capitalise personal friendship and love for their own career. By contrast, they forced their social web online appearance into the extreme, in the communication of role-play, in Blogs and news feeds and exploited personal relations.

This section identifies such contemporary interventions into the "funware" of social networks as practices of role-play, which adapts existing consumer technologies for political intervention, like classical net art of the 1990s minor media operations. By applying these political lines of thinking with the investigation of consumer practices, Fiske called the results "micro politics of everyday life" (Fiske, 1989: 132). Considering requests for minor interventions, the contemporary role-play of the artist in the electronic realm can be redefined. The curator Andreas Brockmann (2001) introduced the term "minor media operator" in order to describe an artist as an activist figure, similar to a political role-player. The focus on minor interventions by artists appears to be crucial in terms of efficacy. In that sense, performing playful arts in electronic networks has its effects. With the start of the network arts scene in the mid 1990s the term minor media operator was inspired by the trust in the efficacy of minor interventions on power structures generally inherent in technologies. As a method of role-play, the concept of minor media operator introduces the artist as equivalent to the attractive public intellectual. **(FIG. 5)**

FIG. 5: *Semacode Dress, Urban Camouflage Performance, Margarete Jahrmann, Digital Arts Week, Xian 2010*

A. EVIDENCE OF POLITICAL ROLE PLAY IN ACTIVISM

Subversion and pleasure in play with the self as a political strategy

This section closes by giving an overview on various approaches to play related political activism, in particular the play with fictional identities, activist art, and its criticisms. In the course of this analysis, a dimension of Jouissance is pointed out. It is tested by an analysis of practices in art activism as fake role-play. These tactical interventions will be discussed as the most effective and powerful strategies for intervention in electronic networks. The pleasurable enjoyment of the play coupled with the self is analysed in this section in order to demonstrate how it transcends materiality of play affordances. Considering these observations, contemporary practices of play with technological materiality, can be newly interpreted. However, these practices of political role-play demonstrate how to become active and conscious by using a dimension of play and lust, gained in the inter-play of the self, the object, and the other.

The pleasure gained by play with the self is important as a motivation for agency. According to the following case studies, the political practice of the activist's role-play is driven by enjoyment of the new meaning introduced in regards to agency. According to the literature survey on activism, Umberto Eco (Eco, 1967: 3) coins the expression "semiological guerrilla" (1967: 3) to describe this shift of meaning in communication. This term describes a practice of inter-play of objects, meaning and subjects. Eco argues:

> *"The battle for the survival of man as a responsible being in the communications era is not to be won where the communication originates, but where it arrives." (Eco, 1967: 142)*

Semiological guerrilla tactics invert the communicated messages; in the moment, they arrive at a public audience and are enjoyed by role-play practices. In these cases, fictional identities are invented as a cover or a mask for

political and activist purposes. The art work evidence – (like *Semacode* Dress, 2010. […] The Urban camouflage dress never shows reality on digital camera displays. It introduces particular Semacode-fashion-patterns as urban dress code, which makes the wearer invisible for digital eyes. The fashion series conceptually aims to trickster mobile phones and surveillance cameras. […] Similar to El Sub Commandante Marco's wool-mask, this piece of clothing makes the wearer invisible for electronic cameras of mobile gadgetry, as phones, which are increasingly used for surveillance purposes) – displays how political role-playing, as an Avant-garde arts practice, allows one to develop an understanding of the joyful agency mechanisms of play politics.

Ludic keyterms are informed by cultural and historical studies, anthropological and political theories, the arts and technical language. "Ludics" as newly coined term can be identified as the most challenging concept, particularly in the way it is introduced and applied, in order to enable further analysis of the intersection of philosophy, anthropology, everyday life, play, politics and art.

NOTES

1) "Smartifacts", that is, smart materials and intelligent artefacts, Saffo, Paul, 1997. Sensors: The Next Wave of Innovation. New York, pp. 93–97.

2) This is what the editors of the Website of the International Chindogu Society state: "Well, dogu is Japanese for 'tool' and chin is Japanese for 'weird' (not to be confused with the Japanese for 'penis', which is also chin). Thus, a Chindogu is a weird tool. Likewise, chinchin is a weird penis. However, under no circumstances is Chindogu ever a penis tool. At least not yet!" http://chindogu.com/chindogu/ [Accessed: Jan 12, 2010].

3) Chindogus inherently contain *Play affordances*. This term is suggested to be used in this paper in order to describe a theoretical and technical aspect of material studies within the field of contemporary technological interfaces. It draws on affordances as expression from design theories (Gibson 1977) and psychology, as an action that an individual can potentially perform in his or her environment. In this thesis, it is identified by a comparative analysis of technological artefacts and objects of contemporary everyday life that require practices of play as technique of interaction.

4) Jouissance is often defined psychoanalytically and culturally: "The usual English translation, 'enjoyment', does not carry the sexually orgasmic connotation of the French term, it does adds to the idea of taking pleasure in something. In Lacanian circles, Jouissance is distinguished from pleasure (plaisir) in that the latter indicates simply the search for psychic balance (homeostasis) through the release of tension, whereas the former is supposed to being in a perpetual state of and in violation of the pleasure principle. There is thus an implicit analogy drawn between demand and desire (see transgression). Julia Kristeva offers a slight development and a bit of wordplay: she uses plaisir for sexual pleasure and Jouissance (or j'ouïs sens, "I heard meaning") as total joy due to the presence of meaning." http://www.arts.ouc.bc.ca/fina/glossary/j_list.html [Accessed: March 6, 2009].

REFERENCES

BROECKMANN, A. (2001), "Minor Media - Heterogenic Machines". In Chimères No.42, Printemps, Paris.

CRITICAL ART ENSEMBLE (1994), The Technology of Uselessness, Ctheory, New York.

DERRIDA, J. (1978), "Structure, Sign and Play in the Discourse of the Human Sciences". In Writing and Difference, Bass, A. (ed.), Routledge, London.

ECO, U., (1987), Towards a Semiological Guerilla Warfare: Travels in Hyperreality, Picador, London.

Fiske, J., (1989), Understanding Popular Culture, Routledge, London.

FRASCA, G., (2003), "Videogames of the Oppressed: Critical Thinking, Education, Tolerance, and Other Issues". In First Person. New Media as Story, Performance, and Game, Harrigan, p. and Wardrip-Fruin, N. (eds.), The MIT Press, London, Cambridge.

GIBSON, J. J. (1977), "The Theory of Affordances". In Shaw, R., and BRANSFORD, J. (eds.), Perceiving, Acting, and Knowing, Lawrence Erlbaum Associates, New York.

HEIDEGGER, M. (1984), Die Frage nach dem Ding: zu Kants Lehre nach den Transzendentalen Grundsätzen, Frankfurt am Main.

JUUL, J. (2003), "The Game, the Player, the World: Looking for a Heart of Gameness." In Copier, M. and Raessens, J. (eds.), Level Up: Digital Games Research Conference Proceedings, Utrecht University, Utrecht.

KAWAKAMI, K. (1995), 101 Unuseless Japanese Inventions: The Ten Tenets of Chindogu, W.W. Norton & Co, New York.

KRISTEVA, J. (1984), Revolution in Poetic Language, Columbia University Press, New York.

LATOUR, B. (1987), Science in Action: How to Follow Scientists and Engineers through Society, Open University Press, Milton Keynes.

PFALLER, R. (2002), Die Ilusion der Anderen. Ueber das Lustprinzip in der Kultur, Suhrkamp Verlag, Frankfurt.

PIAS, C. (2000), Computer Spiel Welten. Dissertation, Bauhaus-Universität Weimar, Weimar.

SAFFO, Paul (1997), Sensors: The Next Wave of Innovation. ACM, New York.

SENNETH, R. (2008), The Craftsman, Yale University Press, New Haven, London.

STERLING, B. (2005), Shaping Things, The MIT Press, Cambridge.

ŽIŽEK, S. (1992), Mehr-Genießen. Lacan in der Populärkultur, Turia + Kant, Wien.

Katerina J. Karoussos

ARTIST, RESEARCHER, DEPT. OF BYZANTINE PAINTING, ATHENS SCHOOL OF FINE ARTS, ATHENS, GREECE
THE PLANETARY COLLEGIUM (CAiiA-HUB) PHD CANDIDATE

ST. ANNA'S BOOLEAN GARDEN

1. INTRODUCTION

This paper analyzes only the beginning of the "Description of St. Anna's garden" which concerns the enclosed wall of the garden in order to focus on its virtuality. In particular it refers to three important allegorical concepts of the text: the shape, the topos and the enclosure of the garden (cypresses).

The text begins and ends with Anna's childless fate. It is important to mention that the description is coincided to the "Annunciation of Anna" (**FIG. 1**), which took place to this very garden. Hytrakenos is continually using the words "fruit", "fruitful" and "fertile garden" to cast out Anna's unpleasant condition. Thus the garden blossomed even if the Annunciation of Anna "was celebrated on 9th of December not a time of year associated with either fertility or renewal" (Dolezal – Mavroudi 2002, p. 138).

2. THE IDEA OF "EKPHRASIS"

The "Description of the Garden of St. Anna" appertains to a special type of literature section which had been formulated in antiquity, under the name of "*Ekphrasis*".

Ekphrasis is a Greek word that means "expression" in a broad sense. This kind of literature has been accused of prolixity and of aesthetic heterogeneity. It is often confused with explicitness when used by orators for political and judicial speeches as well as for panegyric [1] occasions.

Even if *Ekphrasis*' contribution to literature was basically that of a description of artifacts and not of public speeches, they were still contemned, for many centuries, as texts of minor importance.

Henry Maguire quoting from John Onians points out that: "from the second to the sixth centuries orators as they are embroidered what they saw increasingly read more into images than was actually there. Amplification encouraged the development of imaginative faculties of the orators and their hearers, who by the sixth century were able to see more in an abstract image than their predecessors" (Maguire, 2008, p. 722).

Only just recently contemporary literature reviewers like Murray Krieger, W.J.T. Mitchell, P. A. Agapitos, broaden the significance of *Ekphrasis*, injecting new interpretations and illuminating the texts' importance.

The sense of "light literature" in this literature section, is derived from what Mitchell called "the fear for *ekphrasis*".

W.J.T. Mitchell – cited in Agapitos (***Αγαπητός***) adds that, that fear for "*Ekphrasis*" is a fear of alteration, by means of the other, of a strange force that invades in literature, threatens to bring down the order of disciplines. (Agapitos, 2006)

So one can recognize that the lack of ekphrasis' appreciation is equivalent to the failure of appreciating different perspectives and giving sufficient autonomy to participating ontologies. Indeed this phenomenon can be taken as an epidemic which has spread rapidly to art and sciences, making classes of specialization barriers to interdisciplinary processes.

However, according to Agapitos, "*Ekphrasis*" is the point where text and image meet, attracting and repelling all at the same time. (**FIG. 2**)

Image, from the very moment of its disconnection from the artifact, reforms itself throughout the text as it is absorbed by the hearer or the reader.

To illustrate this concept one can refer to another *Ekphrasis*; *Daphnis and Chloe* written by Longus (***Λόγγος***), a Greek novelist of the second century, through which the origination of interdisciplinary concept could be comprehensible.

Longus used the ambiguity of the words: *write* and *copy* to explain the absolute relationship between text and image, since in the Greek language the word "write" is similar to the word "paint" and the word "copy" means something which is written against something else or as an answer to it.

So it is obvious that Hytrakenos' description of St. Anna's Garden is a text that cannot be taken as a simple depiction of a wonderful garden, as long as it diverges from that typical process, while it celebrates entries of allegory and illusion. But the basic operation for the recipient to absorb both image and text, is the activation of the second sight; hence an apperception rather than a perception.

Plotinus (***Πλωτίνος***), ca. CE 204/5–270, a major philosopher of the ancient world wrote in his book *Enneads*: "The man in the state of apperception gazing beyond the conventional, leaving behind the whole body of virtues … Maybe this procedure is not just a visual impression but a different way of seeing, an ecstasy, a mental simplicity, an unconditional surrender; a disposal to communication and synesthesia."

3 CONCEPTS & DESCRIPTIONS

3.1 The shape

Hytrakenos' description of Anna's garden sets forth several "topos" beginning with a vivid image of the enclose surrounding the garden: "The garden had a surrounding wall in the shape of a ring; the shape of the ring is circular"[2] (Dolezal & Mavroudi, 2002, p. 110).

Although in this version, authors used the word circular to translate what Hytrakenos' meant with the word "***περιφερές***", I am going to give an alternative translation which will alter the meaning of the text.

The original text is: "***Περόβολος ήν εκείνω σχήμα φέρων σφενδόνης, τη σφενδόνη το σχήμα περιφερές***". In their notes, Dolezal and Mavroudi point out that the word "***σφενδόνη***" is translated as "sling" and "***περιφερές***" as "revolving, rounded or curved" in H. G. Liddell and R. Scott, Greek–English

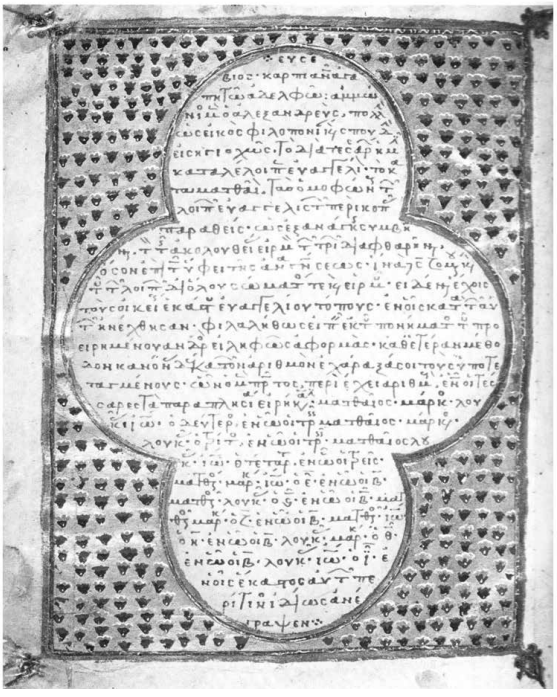


FIG. 1: *"The Annunciation of St. Anne"*
(From "Kariye Djami, Volume II, p. 94. Paul A. Underwood, 1967, Routledge & Kegan Paul – London)

FIG. 2: *Full page ornament, code 33, fol. 17β, from Mount Athos Illustrated Manuscripts*
«Οι Θησαυροί Του Αγίου Όρους », 1973, Τόμος 1. Φωτογράφος: Μάκης Σκιαδαρέσης, Εκδοτική Αθηνών)

Lexicon with a Supplement, Oxford, 1968 (Dolezal & Mavroudi, 2002 p. 143).

This clarification is important because circle and ring can be translated in very different ways demonstrating different approaches both to science and to philosophy and art.

Therefore a ring/sling may be interpreted as a geometric form or as an algebraic structure. So for the geometric ring which derives from the Latin word "*annulus*" the meaning is an area between two concentric circles, for example an open cylinder.

From the other side its algebraic structure means a set with two binary operations (usually addition and multiplication) where each operation combines two elements to form a third one. By that process a set of rings can build up a matrix ring.

In abstract algebra the matrix ring is the set of all n×n matrices over an arbitrary ring R. The matrix ring theory may be used to understand symmetry phenomena in molecular chemistry.

In that point it is necessary to report that Byzantine scholars were much more influenced by their Persian colleagues, than by those from Latin areas, so they used algebra (derived form the Arabic *al-jabr*) as a basic source of knowledge[3]. Therefore the use of ring/sling by its algebraic structure in Hytrakenos' description makes more sense. In relation to algebra, this revolving ring can be referred to a spiral or to a hyperbolic form.

A spiral is a curve which emanates from a central point, getting progressively farther away as it revolves around the point. A two dimensional spiral can be described using polar coordinates and this is the way that it has been described by Archimedes in his work: *On Spirals*.

Hyperbolic geometry is a non-Euclidian geometry. (**FIG. 3**) In the Euclidian theory there is an axiom that says that, in a two dimensional space, for any given line *l* and point *P* there is exactly one line through *P* that does not intersect *l*, that is parallel to *l*. From the other side in hyperbolic geometry there are at least two distinct lines through *P* which do not intersect *l*, so the parallel postulate is false.

Reportedly, Byzantine scholars and artists used the polar coordinate system as their spatiotemporal reference to the relevant distance from the pole, thus the radical distance, was the azimuth.

In about 1413 Filippo Brunelleschi demonstrated the geometrical method of perspective while the invention of Cartesian coordinates in the 17th century by Rene Descartes linked Euclidean geometry with mathematics. From that period and beyond this system has been the protocol of man's spatiotemporal awareness.

However Byzantines never had any intention to follow the pattern of perceptiveness since they were seeking to put forward whatever the pragmatist view covered.

To quote from Panagiotis Michelis (*Παναγιώτης Μιχελής*): "If we take into consideration what Euclidian theory proposed we are impelled by revealing another defect of Renaissance perspective: the dependence of apparent dimensions which are based on the spectator's distance. This phenomenon deployed to such a degree that any subjective notion of the spectator's reality has been distorted" (Michelis, 2001, p. 182).

3.2 Topos

Returning to the text one can detect that the author plays with the ambiguity of the word “topos”. Topos, on one hand means “place” and “topiary” refers to a horticultural practice.

“The word derives from the Latin word for an ornamental landscape gardener, topiarus, creator of topia or places, a Greek word that Romans applied to fictive indoor landscapes executed in fresco” (Wikipedia: revision July 12, 2010).

Alternatively, in the mathematical field, “topos” is a type of category that behaves like sheaves of sets on a topological space. In the usual category of sets, this is the two-element set of Boolean operation, true and false values. (**FIG. 4**)

Hence, while Euclidean transformations are that of translation, scale and rotation, Boolean operations refer to union, intersection and complement. It is obvious that in Euclidean transformations there are two or more points that translate as vectors to Cartesian system and measure distances. They are specified uniquely in a plane, measured in the same unit of length. Conversely the Boolean system is that of relations between points, even if the relation may be oppositional (Wikipedia: revision July 12, 2010).

It is important to mention here is that in Euclidean transformations points are detached, while in Boolean operations they became sets of inclusion and incorporate an empty set, without the need of transformation.

Certainly it would be improper to claim that the Renaissance perspective system and its effect to the interpretation of the “seen” as a shape of plasticity, was derived only because the theory had introduced the coordinate system. The phenomenon goes far beyond that, as it involves the concept of consciousness. Thus, while space, in terms of rationalism, means something inert and finite, Byzantine space is anisotropic and heterogeneous as it is coherent with aesthesia rather than observation.

3.3 Enclosure

Further in the Anna’s garden description, Hytrakenos depicting the revolving sleeve writes: “The other, [the wall], was enwreathed with a chorus of cypresses. The trees were sufficiently stripped of stems in their trunks, and from there grew straight, so that they shot in an upright foliage shaped like a cone, and were so well pushed up and were held in check in such a way, that one would think he was looking at well-girded maidens stretching their hands to one another reciprocally and setting up a noble and harmonious dance” (Dolezal & Mavroudi, 2002: p. 144).

4 PARALLELISM

Such virtual environments with their immersive operations are in accordance with recent art media. (**FIG. 5**) To quote from Oliver Grau: “In many quarters, virtual reality is viewed as a totally new phenomenon … but it [virtual reality] did not make its first appearance with the technical invention of computer-aided virtual realities. On the contrary, virtual reality forms part of the core of the relationship of humans to images. It is grounded in art traditions, which have received scant attention up to now, that, in the course of history suffered ruptures and discontinuities, were subject to specific media of their epoch, and used to transport content of a highly disparate nature. Yet the idea goes back at least as far as the classical world and it now reappears in the immersion strategies of present-day virtual art” (Grau, 2004, p. 5)

FIG. 3 *Ornament from Kariye Djami frescoes*
(Courtesy of the author)

FIG.4. *Ornament, Fresco in Church of St. George, Monastery of St. George, Ras, Serbia*
(Harvard Copyright 2004 by the President and Fellows of Harvard College, Visual Information Access:http://via.lib.harvard.edu:80/via/deliver/deepLinkItem?recordId=olvsite60264&componentId=DOAK.LIB:3206630)

FIG. 5. *The Creation Cupola, Basilica Di San Marco. From Harvard Visual Information*
(Harvard Copyright 2004 by the President and Fellows of Harvard College, Access:http://via.lib.harvard.edu:80/via/deliver/deepLinkItem?recordId=olvwork430942&componentId=DOAK.LIB:2819332)

5 CONCLUSION

Therefore, this technoetic description of St. Anna's garden is a strong evidence for Grau's claims. Hytrakenos created an immersive environment to cast out Anna's faith and he succeeded if we consider the fact that the archangel came to her, celebrating her delivery.

Anna's garden is a virtual topos where real time computing, sensorial interactivity, telepresence and artificial intelligence function in the most magical way.

NOTES

1) A panegyric is a formal public speech, or (in later use) written verse, delivered in high praise of a person or thing, a generally highly studied and discriminating eulogy, not expected to be critical. http://en.wikipedia.org/wiki/Panegyric

2) The English translation of Hytrakenos' text, as well as the references from manuscripts have been taken from the book: "Byzantine Garden Culture" edited by Antony Littlewood, Henry Maguire,and Joachim Wolschke-Bulmahn published by Dumbarton Oaks Research Library and Collection Washington, D.C. "Theodore Hyrtakenos' Description of the Garden of St. Anna and the Ekphrasis of Gardens" Mary-Lyon Dolezal and Maria Mavroudi. 2002 Dumbarton Oaks, Washington D.C.

3) Byzantine scholars had a common knowledge platform with their medieval Islamic colleagues and were closely associated with them. Accordingly, medieval Islamic mathematicians have translated books written by Archimedes, Ptolemy and others and actually many Greek texts have survived only through Arabic translations

REFERENCES

1. ΑΓΑΠΗΤΟΣ, Π. (2006). Εικών και Λόγος. Έξι βυζαντινές περιγραφές έργων τέχνης, Άγρα, Αθήνα. (English translation here by the author)

2. DOLEZAL, M,L. and MAVROUDI, M (2002) Theodore Hyrtakenos' Description of the Garden of St. Anna and the Ekphrasis of Gardens in Antony Littlewood, Henry Maguire, and Joachim Wolschke-Bulmahn Byzantine Garden Culture. Dumbarton Oaks Research Library and Collection Washington, D.C.

3. GRAU, O. (2004). Virtual art: from illusion to immersion. Leonardo (Cambridge), Leonardo Books, MIT Press

4. MAGUIRE, H. (2008). Art and Text. The Oxford handbook of Byzantine studies Oxford Handbooks in Classics and Ancient History, Elizabeth Jeffreys, John F. Haldon, Robin Cormack, Oxford University Press

5. *ΜΙΧΕΛΗΣ, Π. Α.(2001). Η Αισθητική θεώρηση της Βυζαντινής Τέχνης. Ίδρυμα Παναγιώτη και Έφης Μιχελή, Αθήνα* (English translation here by the author)

6. http://en.wikipedia.org/wiki/Topiary

7. http://en.wikipedia.org/wiki/Boole%27s_syllogistic

MANUSCRIPTS

8. *Λόγγου, Δάφνις και Χλόη, Μετάφραση Ρόδης Ρούφος – Κανακάρης 1970 Ίκαρος, Αθήνα*
Longus, literally and completely translated from the Greek. Athenian Society, 1896, Athens (available online at http://www.archive.org/details/longusliterallyc00longrich)

9. *Πλωτίνου, Εννεάδες, κείμ. – μτφ. – σχ. Π. Καλλιγά, τόμοι I-III, Κέντρον Εκδόσεως Έργων Ελλήνων Συγγραφέων, Αθήνα* (here translated by the author)
English translation of Plotinus, "The Enneads" (available online at http://classics.mit.edu/Plotinus/enneads.html)

Max Kazemzadeh

ASSISTANT PROFESSOR OF ART & MEDIA TECHNOLOGY
GALLAUDET UNIVERSITY, WASHINGTON, USA

VISIBLY INVISIBLE: SPUKHAFTE FERNWIRKUNG, MECHANO-MOIST & (THE) ENLIGHTENMENT

"If one who sees is conscious that he sees, one who hears that he hears, one who walks that he walks and similarly for all the other human activities there is a faculty that is conscious of their exercise, so that whenever we perceive, we are conscious that we perceive, and whenever we think, we are conscious that we think, and to be conscious that we are perceiving or thinking is to be conscious that we exist ..." [1]

Embodying Feuerbach's notion of da-sein, I honestly can't say that I know I exist, and I have trouble accepting the popularized je pense donc je suis or cogito ergo sum of Descartes (1637), as well as it's respective dubito misinterpretation.

And even if I do exist, I don't know that "you" exist other than within a phantom "mirage" (shares it's root with "mirror") or a hallucination of whatever "my" experience may be.

And third, with Heidegger's correction of da-sein into Dasein, I honestly don't know that existence exists other than the fact that "we" are "here," "now."

However, to retain some semblance of sanity I will channel what I feel Descartes should have said, but was more poignantly stated by Samuel Taylor Coleridge (1817) as the "willing suspension of disbelief," originating as a strategy to justify the use of fantastic or non-realistic elements in literature, as methodology to toil in the world of unknowns.

With this philo-literary strategic mash-up, while pulling from Tiller, Chalmers, Pert, Goswami, Sheldrake, Bohm, Emoto, and Hagelin, one might toil within this world of unknowns, employing the following process of Zen-gagement to discover how the already visible invisible internal mind functions as a moist interface, interacting physically with the matter both near and distant.

So appropriating Karl Poppers notion of "falsification," this paper seeks to challenge the empirical, and investigate alternative syncretic processes that may be used to reveal the invisible as it contributes to the collectively constructed metaphor of "reality" and our perception of it's existence on the human (thought, perception), sub-human (quantum studies, sub-atomic), and super-human (historical, metaphysical) scales.

WHAT IS THOUGHT?

In Old English is þoht, geþoht, from stem of þencan "to conceive of in the mind, consider." Cognate with the German, Gedächtnis "memory," Andacht "attention, devotion," Bedacht "consideration, deliberation."

Thought can be defined as forms conceived in the mind, rather than the forms perceived through the five senses. Thought and thinking are the processes by which these concepts are perceived and manipulated. Thinking allows beings to model the world and to represent it according to their objectives, plans, ends and desires.

EPR PARADOX

Why did Einstein refer to his 1935 thought experiment with Boris Podolsky and Nathan Rosen revealing the concept of quantum entanglement, also called the quantum non-local connection, "Spukhafte Fernwirkung" or "spooky action at a distance."

The word spooky dates back to 1854 from "spook" + "y" and relates to something that is: a) like or befitting of a spook or ghost, b) is suggestive of spooks, ghosts and hauntings, c) relates an eerie or scary feeling, or d) especially for horses, relates a nervous or skittish personality.

In Einstein's instance, spooky seems to play on the same ambiguity that the prefix cyber (ultimately from cybernetics) shares. A 1996 quote from the New York magazine stated that, "Cyber is such a perfect prefix. Because nobody has any idea what it means, it can be grafted onto any old word to make it seem new, cool – and therefore strange, spooky." [2]

Einstein gave the unknown a name and a definitive label and moved on, like the use of black box in Norbert Weiner's Cybernetics. Some would argue that the black box construct is a perfect container to place things we don't understand so we can move on. To some degree the act of using the black box can be likened to language. When we identify more than one black box within a system, both black boxes would require labeling, or words, so as to identify one black box from another. Louis Kauffman, President of the American Society for Cybernetics defined Cybernetics as "the study of systems and processes that interact with themselves and produce themselves from themselves."

Within Einstein's determination to playfully define the experiment as spooky, he didn't discount quantum entanglement from existing within the context of the experience, but rather was merely acknowledging the results as unknowns, seeking to find veritable ways in which to challenge the chosen empirical process and to find contradiction within his established, widely accepted special and general relativity theories.

Albert Einstein in a letter to Niels Bohr in 1920 wrote, "Not often in life has a human being caused me such joy by his mere presence as you did." [3]

There relationship was that of friendship and comradery using the "narrow field" (Bohr) of physics as a

FIG. 1

metaphorical playing field, exploring similar topics from different perspectives. While serious in it's engagement, The EPR Paradox was a partial response to Niels Bohr's advocacy for quantum mechanics, and what might have stemmed from a more open philosophical approach to the area of physics. There was clear documentation revealing that Bohr enjoyed reading Kierkegaard. Even though Bohr mentioned that he disagreed with some of Kierkegaard's ideas, he sent his brother a copy of Kierkegaard's *Stages on Life's Way* as a birthday gift, stating, "It is the only thing I have to send home; but I do not believe that it would be very easy to find anything better … I even think it is one of the most delightful things I have ever read." [4]

Of all philosophers, Kierkegaard was an interesting philosopher to read considering all of Bohr's engagements, from receiving the Nobel Prize in Physics to his assistance in the development of the German and American atomic bombs, as well as the Manhattan Project. For Kierkegaard knowledge of objective reality on which science is based cannot be true knowledge but is rather what he calls a pure relativism of opinions. He referred to scientific "progress" as "a continual advance toward nothing" and never accepted the existence of objective reality external to man and his ideas. [5]

This dichotomy can be witnessed in Borges' *Imagined world of Tlön*, where he describes a school of literary criticism that investigates the change in perspective and experience one can have when imagining a completely different author in place of the actual author while reading a work.

> *"There is no quantum world. There is only an abstract physical description. It is wrong to think that the task of physics is to find out how nature is. Physics concerns what we can say about nature." [6]*

THE MIND BODY PROBLEM

The oldest representation of Mind-Body Duality can be found in the philosophy and teachings of Zarathustra, or Zoroaster, originating in Persia approximately 1000 years BC, dealing with speculations as to the existence of an incorporeal soul that bore the faculties of intelligence and wisdom, and maintained that people's intelligence was a faculty of the mind or soul, and could not be explained in terms of their physical body. The writings of Zoroaster reflect a kind of mind body duality where thought and action are always stated separately, however, in most cases sharing a parallel reality.

> *"Taking the first footstep with a good thought the second with a good word and the third with a good deed I entered Paradise." (Zoroaster)*

Before Zoroaster, Buddha stated "The secret of health for both mind and body is not to mourn for the past, worry about the future, or anticipate troubles, but to live in the present moment wisely and earnestly." There is no differentiation between mind and body engaging in the act of mourning, which one could argue is primarily an engagement of the mind within a dualistic context.

Plato argues in the *Timaeus*, that if one derives one's account of something experientially, because the world of sense is in flux, the views therein attained will be mere opinions. And opinions are characterized by a lack of necessity and stability. On the other hand, if one derives one's account of something by way of the non-sensible forms, because these forms are unchanging, so too is the account derived from them. It is only in this sense that Plato uses the term "knowledge".

Descartes was the first to clearly identify the mind with consciousness and self-awareness distinguishing it from the brain, which he considered the seat of intelligence. In his *Meditations on First Philosophy*, Descartes moved towards what he called all his previous beliefs into doubt in order to find out what subjects he could be certain of. Within this investigation he could doubt whether he had a body, but not whether he had a mind. In this Cartesian dualism mental events cause physical events, and vice-versa. Interactionism raised the question regarding how an immaterial mind might affect anything in a material body, and vice-versa? Descartes struggling to find an answer to this problem suggested mind and body interacted via the pineal gland but was still discontent. [7]

In the book discussing consciousness and it's relation to the mind body problem, *The Conscious Mind* (1996), David John Chalmers argues that all forms of physicalism that have dominated modern philosophy and science fail to account for the existence (that is, presence in reality) of consciousness itself. He proposes an alternative dualistic view he calls naturalistic dualism.

Chalmers states, "This is a familiar hypothesis. If one believes that God created the world, and if one believes that God is outside physical space-time, then one believes the Creation Hypothesis. One needn't believe in God to believe the Creation Hypothesis, though. Perhaps our world was created by a relatively ordinary being in the 'next universe up', using the latest world-making technology in that universe. If so, the Creation Hypothesis is true. I don't know whether the Creation Hypothesis is true. But I don't know for certain that it is false. The hypothesis is clearly coherent, and I cannot conclusively rule it out. The Creation Hypothesis is not a skeptical hypothesis. Even if it is true, most of my ordinary beliefs are still true. I still have hands, I am still in Tucson, and so on. Perhaps a few of my beliefs will turn out false: if I am an atheist, for example, or if I believe all reality started with the Big Bang. But most of my everyday beliefs about the external world will remain intact."

As we all know, *In An Essay on Human Understanding* John Locke laid out the thesis subject that the mind of a newborn is a blank slate (tabula rasa) and that all ideas are

developed from experience. *Book I* of the Essay is devoted to an attack on nativism or the doctrine of innate ideas. Locke allowed that some ideas are in the mind from an early age, but argued that such ideas are furnished by the senses starting in the womb: for instance, differences between colors or tastes.

While Innatism refers to the philosophy of Plato and Descartes, Nativism, grounded in the fields of genetics, cognitive psychology and psycholinguistics, holds that innate beliefs are in some way genetically programmed in our mind, and are the pheno- and geno-types that all humans have in common.

Benefit of Innatism or Nativism: It is an alternative, and according to Chalmers, we can stay comfortable accepting the notion that a sound argument can be good enough to explain existence.

In the 1950s, Chomsky introduced the notion of "an innate set of linguistic principles shared by all humans" known as universal grammar challenging Locke's view of the tabula rasa. [8]

MYSTICAL REALITIES

In many beliefs and practices intoning a prayer has special spiritual significance in regards to impacting characteristics within the physical realm for an individual or group. Korea maintains an extremely active techno-culture balanced by the chosen national religion and religious practices of shamanism. While Korean shamanism is the native religion of the Korean Peninsula, Buddhism, the dominant religion, merges with shamanism in regards to its primary beliefs and practices.

Shamanism has its roots in ancient, land-based cultures, dating back 40,000 years. Similar to shaman in other parts of the world, the Korean shaman was known as "magician, medicine man, psychopomp, mystic and poet" (Eliade, 1974). What sets him apart from other healers or priests is his ability to move at will into trance states, where the shaman's soul left his body and traveled to other realms, where helping spirits guided him in his work. The shaman provided a kind of enlightenment healing on many levels; physical, psychological and spiritual.

CONCLUSION

The great extension of our experience in recent years has brought light to the insufficiency of our simple mechanical conceptions and, as a consequence, has shaken the foundation on which the customary interpretation of observation was based. [9]

While there is little consensus as to the date marking the beginning of the Enlightenment, the less disputed notion that the Enlightenment symbolized free and independent thought, dissolving the strict control of church and the imposed doctrine of what Peter Gay calls the "sacred circle" may be one of the reasons the Enlightenment had such a long standing and profound impact on the way society views research and valid intellectual progress, and is still valued for its contribution to democratic and capitalist social ideologies. Coupled with what Kant reinforced in "What is Enlightenment?" as the time that made way for the freedom to use one's own intelligence, so did the scientific, empirical, and ontological methodologies develop, which required that "rationality" and "reason" be used to resolve all problems contributing to the establishment of new knowledge. This widely accepted neo-rationality may possibly have emerged as an answer to dogmatic and innate discourses, but more probably surfaced as a direct reaction to the authoritarian practices of the church embodying that dogma, where these new ideologies served as propaganda in the support for a free, secular society. As in most revolutions, one leading ideology is toppled and replaced by yet another, and so on.

REFERENCES

[1] ARISTOTLE, and ROSS, W. D. 1998. Nicomachean Ethics, Oxford University Press, USA

[2] 1996. "New York Magazine"

[3] July 10, 2010. http://physics.about.com/od/nielsbohr/p/bohr1.htm

[4] STERN, David P. 2005. Retreived 2007. "The Atomic Nucleus and Bohr's Early Model of the Atom". NASA/Goddard Space Flight Center.

[5] F. SELLERI, and Alwyn van der MERWE. 1989. Quantum Paradoxes and Physical Reality (Fundamental Theories of Physics). Springer; 1 edition.

[6] AAGE PETERSEN. 1963. "The philosophy of Niels Bohr" in the Bulletin of the Atomic Scientists Vol. 19, No. 7.

[7] DESCARTES, R. 1984. Meditations on First Philosophy, in The Philosophical Writings of René Descartes, trans. by J. Cottingham, R. Stoothoff and D. Murdoch, Cambridge: Cambridge University Press, vol. 2, pp. 1–62.

[8] CHOMSKY, Noam. 1999. The Cambridge Dictionary of Philosophy. Cambridge University Press, p. 138.

[9] NIELS BOHR. 1934. Atomic Theory and the Description of Nature. Ox Bow Press.

Rachel Kessler

Matthew L. Fielder

THE TEXT THAT READS WOLF

An invitation to further question false alarms and the persistence of logical belief

Matthew L. Fielder & Rachel Kessler

The materials collected here are offered as suggestions and may function generally as a question, examination, or script.

How to read and play with this text:

IT IS IMPORTANT TO NOTE that the reading of this text, either read aloud Or read to one's self, alone or with others, forwards or backwards should be accompanied by the sound of an activated alarm. In order to appropriately activate this text a clip of the necessary audio is available on the web at: http://teamzatara.blogspot.com/

(When read to one's self the use of headphones is recommended. When reading the text aloud, as in the case of a lecture or panel presentation an electric speaker system for the amplification of the audio and a microphone for the presenter(s) is suggested) or…

IN CASE OF EMERGENCY PULL THE NEAREST FIRE ALARM!

PRESS PLAY

FALSE ALARMS

Origins of warning:

The false report of any danger which may produce panic or apprehension in people, including the asking of assistance to where it is not needed can be considered a false alarm. Each year millions of false alarms are reported by United States fire departments. Since the early nineteen eighties the amount of false alarms has been rapidly increasing and the number seems to be escalating each year.

The National Fire Protection Agency has identified the false alarm according to the following categories:

1-malicious calls
2-system malfunctions
3-accidental
4-other

These types of false alarms are costly and take up many resources.

1-'One may try to change one or more of the beliefs, opinions, or behaviors involved in the dissonance; 2-One may try to acquire new information or beliefs that will increase the existing consonance and thus cause the total dissonance to be reduced;3-One may try to forget or reduce the importance of those cognitions that are in a dissonant relationship.' (Festinger, 1956, 25-26).

WHERE THERE IS FALSE SMOKE? :

False alarms are problems not only for those who respond to them but also for the people who are subjected to them. The creation of situations which refer to this danger and which are later concluded to have been untrue could cause unnecessary panic. When a false alarm occurs repeatedly in the same place over an extended time, it can cause those involved to ignore the alarm.

If this pattern repeats itself enough those people who are subjected to the alarm will come to assume that **ALL ALARMS ARE LIKELY FALSE**.

This creates a false 'alarm state' in which those involved develop an uncomfortable social psychology based on the shared situation. In this state it becomes possible for someone to actually dismantle the alarm out of its pure inconvenience. In this sense, the nature of the false alarm as an oppressive consciousness is transformed by an action – which no longer limits those involved from 'acting truly human.'

THE EFFECTS OF FIRESIDE CHAT:

The phenomena of false alarms in schools are traditionally rationalized as pranks, often occurring as the product of a mischievous student wanting to cause panic for amusement or personal benefit. The intention of this mischievous deed is to generate an abrupt disturbance in the daily routine.

There is however an unusual *substitution effect* involved with this phenomenon.

The false alarm is such a common occurrence in the school that it is largely ignored. False alarms become so frequent that they have no actual claim on 'truth', as they are generally understood to be unequivocally false. When an alarm goes off in school both the teacher and the students tend to assume the alarm's falsity and resume to their activities, sometimes continuing class through the (TBC)

…until the alarm stops.

Here the alarm is looked at as more of a nuisance than anything else, as it does not generate the suspense or the sense of urgency it once signified. The ~~reason for what would seem to be such a~~ collusive attitude toward a signal of warning begins to be defined through a non-presence or an inability for the alarm to articulate not only the metaphorical, but also the actual. "Simulation is infinitely more dangerous since it always suggests, over and above its object, that *law and order themselves might really be a simulation*."(Baudrillard, 1988, 190)

Familiarity can be seen as a symptomatic function of the false alarm. Creating false events of actual repetition changes the subject's relationship to the alarm itself. Since ~~the al~~arm ~~is no l~~onger able to emphasis meaning or generate the intended emotional response it *becomes* ***a listening object*** that is unable to disassociate itself from participating in any meaning of regularity. If the alarm is not serving its intended use, it is therefore no longer serving those who are subjected to it.

In this condition the alarm becomes a formal displacement of power; when this happens the warning will be disregarded as a malfunction. An inability to designate any form of specific liability is produced when large alarm systems fail. In the case of a mischievous student pulling the schools fire alarm there would be an administrative punishment, but in cases of systematic failure it becomes more difficult to conclude upon or "make rational" the cause. "Evidence refers to what is obvious, what makes sense, what is striking and, by the same token, opens and gives a chance and opportunity to meaning. Its truth is something that grips and does not have to correspond with any given criteria." (Nancy , 2008, 42)

BURNT BY FALSE FLAMES:

Certain students may find class work boring and the false alarm may provide an enjoyable experience as opposed to the regularity of the classroom. In this way false alarms may produce any number of various behaviors within people. Dissonant behavior presupposes a certain ratio of internalized tension. Self-perception alone is not enough to disassemble dissonance; one cannot account for any actual meaning, but only for the plurality of ***Q***uestions.

A: "Okay*, i just got busted for this at my school so i have the first hand knowledge. Each activation costs about 600 dollars and is your highest possible fine. I'm only sixteen and my final sentence was 20 hours community service, supposed to be 6 months random drug testing but my lawyer had that switched to a mental health evaluation which my insurance will cover. and* ***a three page paper written on the dangers of pulling a false fire alarm which I'm in the middle of working on... that's how I found your question****."*
(http://wiki.answers.com/Q/What_is_the_penalty_for_pulling_a_fire_alarm)

THE CHALLENGE OF FALSE ALARMS:

When there is no longer any **sudden** sense of distress produced from the school's fire alarm the immediate suspense caused from an actual threat of

danger is greatly reduced. “Facticity differs from factuality in that it is a way of **being-in-the-world** and not simply an entity in the world (of course factuality is the condition of possibility for any facticity.)” (Vinager, 2008, 98) The insecurity is not limited by a sound of warning, rather any information intended to warn or even to call attention becomes more complex. When the element of tension can no longer be supplied, the alarm will have a lack of dramatic effect. The alarm must then somehow reconstitute itself as an introspective situation as it **creates** a gap between two conflicting ideas.

"There was **less** to know in preceding centuries, and you'll notice that, paradoxically, knowledge then aimed at **certainty and** totality. The **more** knowledge grew the greater the unknown grew, we might conclude; or rather the more information **flashes** by the more we are aware of its incomplete fragmentary nature**.**" (Virilio and Crary, 2009, 55)

COGNITIVE DISSONANCE ⊗ + :)
False alarms within the conscious memory of action:

Any type of anxiety caused by holding two simultaneous and contradictory attitudes or beliefs can be understood as cognitive dissonance. In addition, these cognitions also refer to the awareness of one’s own body and behaviors as altered not only by incoherent meaning, but also by *pure* ***over stimulus.***
“Dissonance and consonance are relations among cognitions that is, among opinions, beliefs, knowledge of the environment, and knowledge of one's own actions and feelings. Two opinions, or beliefs, or items of knowledge are dissonant with each other if they do not
fit
together;
that is,
if they are **in**consistent,
or if, considering only the particular two items, one does not follow from the other .” (Festinger , 1956, 25).

REAL ALARMS AND FALSE FIRES:

A dissonance is an incongruent agreement; that is to say, the perception of a rational ~~inconsistency~~ within a persons rationale. When one idea suggests the opposite of another dissonance is reached. This becomes the perceivable awareness of a contradiction. The recognition of this inconsistency in ones self may cause a person to feel stress, anxiety or any number of uncomfortable physical and emotional sensations. When our understandings become inconsistent with our feelings, they may be processed as ~~irrelevant~~.

The realization that our emotions and logic contain such irrelevance may conflict with the conception of ourselves. This implies that an ego must begin to deeply analyze the practice of *one’s present* choice making and past decisions. Such analysis will likely contain certain ramifications.

THE SMOKE OF FALSE FIRE: AS THE ALARM FAILS…

The consciousness of one’s own [illegible word] behavior proposes the ability to reduce dissonance. The cognitions developed around one’s different actions may lead to a **change** in one’s own attitudes. *“The person may try to change one or more of the beliefs, opinions, or behaviors involved in the dissonance; to acquire new information or beliefs that will increase the existing consonance and thus cause the total dissonance to be reduced; or to forget or reduce the importance of those cognitions that are in a dissonant* ***relationship****."* (Festinger, 1956, 25-26)
When dissonance has been reduced to certain quality of life issues it has been reduced to its most essential state.

"Dead Point: the neutral point where every system crosses the subtle limit of reversibility, contradiction, and reevaluation, in order to be completely absorbed in no contradiction, in desperate self-contemplation, and in ecstasy…" (Baudrillard, 1988, 190)

This would ~~conclude~~ that a person is constantly rationalizing and therefore not ever a **being** of rational activity; this condition suggests that while an action is both factual and perhaps ~~permanent~~, only the questioning of it's activation or activity remains possible. Consider Revising ⟶

"…the epileptic state of consciousness produced by speed, or rather, the consciousness invented by the subject through its very absence: the gaps, glitches and speed bumps lacing through and defining **[consciousness]**." (Virilio and Crary, 2009, 55)

When the persistence of belief is in decline, dissonance generates itself freely. As the alarm fails both the cognitive realizations of the actual fire and the false fire come in to conflict; they reach an inconsistency but only up to a certain point of reduction. The acceptance of a new attitude is maintained only if such a reduced state of dissonance can support itself. Otherwise, the entire concept of the alarm will be completely abandoned.

THE FALSE FLOATING EMBER:

A variety of behavior may also appear in reduced states of dissonance, as an action may come in to conflict with one's own positive image of self. This motivates the two inconsistent ideas to join in to one total concept of inconsistency; ~~where constructing the self can be sheltered, rather than remain solely private processes~~. Even if upon evaluation of an alarm and the confirmation of its validity, the elements of dissonance would remain evident in association with the inconsistency of meaning.

THE UNKNOWN FIRE:

Connectivity between situational context and the disposition of personality add to the complexity of false alarm phenomena as they are both indeterminate. It is not ~~the determination of danger~~ that causes this effect, but the cues of such a potential emergency event occurring. It is only the signs of warning and danger that are involved. However, it would seem that these signs carry psychological as well as physiological reactions.

Cognitive dissonance has been called "the mind controller's best friend" (Levine, 2003, 202).

FIRES TO COME:

The mediation process that develops during psychologically extreme situations involves thinking and _____ on various levels. Internal and social mediation during false alarms is the result of the ability to anticipate coming danger. To realize that harm and danger are not presently at hand does at the same time include the notion of possible harm in the future. This unknown danger then becomes a complex component in the rationalizing process and a major element in the false alarm syndrome.

ADDITIONAL INQUIRY:

-What makes a fire real?

-How do you know when an alarm is really false?

-How do you account for the attitude of people during a false alarm?

-What could be done to change that attitude?

-Do you think an alarm is able to control people?

-Is a false alarm still an alarm? Why or why not?

-Is the false alarm a technical malfunction or a social problem, or both? Explain?

EXERCISES INTENDED TO ACCOMPANY THE FALSE ALARM:

The exercises that follow are suggested in reference to the text, they are a way to explore improvisation, creativity and vocabulary. These exercises may also be used in the event of an actual false alarm. Exercises should be performed for the duration of the audio. Start the audio at the beginning of each exercise.

BECOMING FLAME: (INDIVIDUALS)

- 1.Balance your weight on the back of your feet.
- *(Think about a small spark coming from your belly)*

- 2.Move your entire body freely.
- *(The spark becomes a small flame and starts to flicker)*

- 2.Move around freely in all directions.
- *(The flame begins to jump around as it looks for oxygen)*

- 4.Take up space slowly; begin to sway changing your feet.
- *(The flame is heating up; it is burning up the room)*

- 5.Put your arms out to the sides and rotate them in all directions
- *(The flame is becoming a fire so big it could burn up a building)*

EMERGENCY RESPONDERS: (GROUP)

Separate in to **two groups**; try to make the groups evenly numbered.

Group1 goes to one side of the room, while **Group2** goes to the other;
Create as much space between groups as possible.

Create the two character group play types:
Group1 plays the ***"helpless"***
Group2 plays the ***"rescue responders"***

The ***helpless*** group hears the alarm and yells out for help.
Suggested vocalization: **"help!"**

The ***rescue responder*** group hears the cries of the helpless group.

Suggested vocalization: **"hold on!"**
Both groups reach their arms out towards one another. The groups continue to reach out for each other but stay in place until the alarm is over. When the alarm finally stops the two groups shake hands with each other.

REFERENCE:

BAUDRILLARD, J., 1998. Selected Writings, 7th ed., Stanford University Press.:

FESTINGER, L., 1964. When Prophecy Fails: A Social and Psychological Study, Harpercollins.

LEVINE, R., 2003. The Power of Persuasion - How We're Bought and Sold, Wiley & Sons.

NANCY, L., 2001.The Evidence of Film, Yves Gevaert.

VINEGAR, A., 2008. I Am A Monument: on Learning from Las Vegas., MIT Press.

VIRILIO, P. & CRARY, J., 2009. The Aesthetics of Disappearance, Semiotext(e).

Linus Lancaster

CAiiA, UNIVERSITY OF PLYMOUTH, UK

THE REAL DIRT ON LAND AND LOCATION

"He makes the horrible ordinary so that we might believe it; and then He makes the ordinary horrible so that we might fear it." (Jay Cantor on Resnais' ***Night and Fog****)*

The *really real* is "magic", to put it in the most direct possible way, Magic in all its ecstasy, horror, banality, mystery, concreteness, and subtlety. In other words, it is contact with what exceeds one dimensionality, either straddling multiple "realms" or disrupting the notion of dimensionality itself. However, beginning from an umbrella term, especially one so encumbered, is a distraction, and it is probably more productive to look instead at a constellative analysis of what is called to the fore, which in this discussion is Dirt. Dirt and Soil are certainly not the only subjectivities through which such an attempt could be made, but they (interchangeably) are ideal as an opening on a discussion of what must include and exceed the known and the rational.

The "really real" has to do with shaping and re-thinking (massaging) our interrelations with the material and flow, the fabric, of being towards an intensified actuality that implies an ethic of expanding performativity and thought, towards a broadening of consciousness. It is not different from the call of the post-human in its broadest sense: the acknowledgement of what is within and beyond human perception and human control as disruptive of an insular, species-centric viewpoint. It implies, and opens on, "larger realities" and the more-than-human. It refutes the notion of human (or Animal) autonomy as a constitutive ontology. It flows from the question, the point of departure, of what and how is intensification of being, and towards what?

In *The Spell of the Sensuous*, David Abram tells a story of his stay with a family in Bali who put out small offerings of rice to the household gods, which, to his surprise were gone in the morning. By watching closely he noticed that a trail of ants would come and carry the offerings away. This was greeted with amusement and some scorn, as he felt that his hosts were simply wasting food, until it occurred to him that the ants were the very household gods to whom the offerings were made. Rather than reading this as a refutation of "non-material" spirit, I see it as de-centering towards an opening on the observable contaminations between different states of consciousness and different realities. This is not to attempt to define magic, but to articulate its operation as, among other things, allowing the known and the, as of yet, unthinkable to coexist towards the annihilation of their separation.

In conventional terms, "the more real" the higher the impact, the higher the stakes: the realer the scarier, at least potentially. This fits with what I am proposing, but fear immediately brings in complications with some unexpected results. As Bataille points out in his discussion of sacrifice, fear inevitably accompanies the transformation of the sacrificial subject not into, but out of objectification in the act of sacrifice – into the real. At the same time, obviously, fear can simultaneously act as a blockage to acknowledgement of the actual. None the less, I would suggest that intensification of the real calls for heightened activity, heightened discipline, potentially heightened stress, but also the heightening of the ecstatic as a potentiality which can accompany a more active, larger-than-human ethic to-come.

What (where) does the real occupy? Phenomenologically, the actual has tended to share a mutually constitutive ontology with constructed dimensions. Whether established by observation or the limits thereof, the real has "had it's place" according to modernism. The post-modern has, to one degree or another, effectively concerned itself with dismantling the notion of a space for the real as a distinct demarcation. As particular spaces are called into critique, so too have recent observations in physics (not to mention some going back to the middle of last century) shown us a "flickering" spatial underpinning "wherein" space and time are not necessarily the measure of what appears to occupy them.

Not withstanding the "arrow of time" and its relation to

the time of life and the concrete, linear time will constitute only a part of a post-humanist, (post-Eurocentric) temporal understanding. In acknowledging that the really real may exceed experiential, temporal-spatial limitations, we begin to see what may be opened by disrupting the very idea of a closed dimension. As the notion of time and space as static receptacles to be filled pales, what comes forward is at once their constructed-ness unto perception, and also their unseen, subconscious flows of desire, trajectories, paths of least resistance, dances, that are perhaps discernable through more-than-rational means. They are discernable in acknowledging more-than-western temporal sensibilities that open onto possibilities flickering between comprehensibility and unthinkability at the edge of knowledge, "between" being and non-being in excess of ontology.

Part of the ethic of the pursuit of the real is the "knowledge" of the unthinkable created by an increased receptivity to moments of clarity, telepathies, past experience, alterities, and contact with the sacred that open on the "more-than-real": ecstatic moments of "flickering ontology" where being appears "from nowhere" and necessarily "disappears", collapses back into unthinkability except for an "eternal" resonance in memory. This resonance doesn't fill time or space, on one level it negates both. Eruptions of borrowed energy happen "in" time only in that they repeat "themselves" as if being from the same energy? Similarly the language that is the hub of flickering ontology is the to-come (as is language at large for Agamben) by a similar dynamic. If I say "place" twice I have not spoken the same word. On one level yes, on one level, impossible. Both are real. The really real acknowledges both. Thus it needs a thought process, not a specific one, but a larger one. The really real is a larger tent – its size is irrelevant (infinite) but its diversity matters.

By broadening our understanding and interpretation of thinking, consciousness, and Materialities we more creatively build our experience and come increasingly into contact with what is. We begin to observe real languages that we couldn't hear before. We make ourselves real when we come into contact with them. We make that contact really real when that contact expands beyond itself, when it becomes Offering. We loose ego in the practice of offering as the highest act of individual will. We exceed human limitation while coming in contact with deepest humanity. We enter the spiritual while embracing the fullest, broadest physicality. The post-human calls on us to rethink our relationship with our host-body, namely Dirt, "the ecstatic skin of the earth" (Logan, 2007). Soil is complex beyond a unified scientific definition, it is teaming with life, it is alive, and it is inexorably connected to more-than-human processes of consciousness. There is nothing more real for humanity's future than the distress signals that it is exhibiting.

Interdependently with the attempt to articulate the more-than-human through our relationship with Dirt, I recently staged a large installation called the Dirt Gallery, which put local Soil on display next to the Russian River in Healdsburg, CA. Due to the nature of the exhibit it didn't fit in a gallery or a museum, so it was comprised rather of a 25'x12'x6' excavation in the local Yolo Loam. Along with ecological and typological displays of Clay, Dirt, and Rock were text-based pieces that called into question the division of human vs. geologic time with reminders that "Dirty" time (Soilogic) operates both at a glacial pace and in flash moments as well. For example, a thimble-full of Soil can accumulate in the crack of a sidewalk and allow grass to sprout that will break the concrete in a few short years. Not only can one see it in process, but it also serves as a reminder that life forms function as open systems of exchange as much as autonomous containers. The disruption of temporal conventions therein was meant as an opening, for those unaccustomed to thinking about temporalities, from which to consider that ideas about linear and non-linear time (common in non-western cultures) can coexist in a larger conceptual framework.

Another exhibit suggested the potential agency of local Soil up to and beyond the possibility that moving it may splice location. While it may sound irrational on the surface

it is a common feature of legal systems (not to mention spiritual sensibilities) throughout the world. This was addressed by a patch of Soil from Mexico that declared a de-centered embassy within the gallery space. Another feature of the Dirt Gallery was its brevity. It was open for a day and then filled in with no visible trace remaining, yet it would be transportable to another location if necessary.

Dirt is very real, very much alive. Nothing is more concrete. But equally it is terribly complex to the point of real mystery. At the same time it is calling on us in a terribly real way to rethink our conventions and practices that are species-centric in nature. This makes up a large degree of what the post-human implies. That previous ecology movements have run up against serious limitations or failures has much to do with the fact that they remained humanist projects. Dirt has tended to remain largely invisible in many ecological projects, perhaps because it has abject associations that water and air do not. Yet it encompasses both, and the address of their wellbeing cannot be excised from that of Soil. To study it both on physical and theoretical levels at once is to begin to understand life as systemic interdependencies. The acknowledgement of its breadth as an ungraspable potentiality at the very edge of thought is an acknowledgement of magic. Soil to-come is a constellative hub of interpretation, a horizon, through which reality may be analyzed microcosmically or macrocosmically to infinity.

SOURCES

WARREN, Charles. Beyond Document. Wesleyan University Press, Hanover, NH. 1996

ABRAM, David. The Spell of the Sensuous. Random House, NY, NY. 1996

BOTTING, Fred and Scott Wilson. The Bataille Reader, Blackwell Publishers, Oxford, UK. 1997.

AGAMBEN, Giorgio. Coming Community. University of Minnesota Press, Minneapolis, MN. 1993

LOGAN, William Bryant. Dirt. Norton Press, London UK. 2007

Renata La Rocca

POST-GRADUATE RESEARCH STUDENT AT THE SCHOOL OF ARTS AND COMMUNICATIONS, UNIVERSITY OF SÃO PAULO, BRAZIL
renatalarocca@gmail.com

MNEMONIC NARRATIVES: THROUGH THE LEVELS OF REALITY

MNEMONIC NARRATIVES

Considering that artificial memory is established from the relation between places and images (*Constat igitur artificiosa ex locis et imaginibus*), places can be known consciously or not. Places where we can construct associations between the ones that are present in our unconscious, but where we've never been physically. Yates (1984) suggests to make a tour through spaces – loci, where "Images and forms, marks or simulacra (*formae, notae, simulacra*) of what we wish to remember," would be stored but also that their imagination is allowed to build.

These "magically activated images" Yates is talking about give the predominance of a dynamic knowledge based on harmony between mind, feelings and body in a dynamic dialogue, considering a transdisciplinary approach where the focus is the knowledge which is between the disciplines, across the different disciplines, and beyond all disciplines.

Basarab Nicolescu discusses a knowledge process "*in vivo*" – a knowledge process that comprises the knowledge from different levels of reality and from different levels of perception. According to the author (Nicolescu 2002) "[…] by the 'level of Reality', we intend to designate an ensemble of systems that are invariant under certain laws: for example, quantum entities are subordinate to quantum laws, which *depart* radically from the laws of the physical world. That is to say that two levels of Reality are *different* if, while passing from one to the other, there is a break in the laws and a break in fundamental concepts (such as, for example, causality)."

Considering this perspective, our objective is to understand how knowledge spaces can be potentialized by exploring the concept of "magically activated images", allowing to build shared "knowledge environments" focusing on interconnectivity, interaction, cognition and learning. In this context, interconnectedness can be understood as the web of processes going on between the different levels of reality, in a non-reductionist way.

From the Art of Memory perspective, when we think about the connection between "*imagine et loci*" to memorize a discourse, this process is based on the association of interrelated contents. We must print in the memory, by using our imagination, contents that are related to a specified *loci*. According to Frances Yates (1980, p. 4), in this process "[…] you chose images to remind you of the points of your speech, and you placed these images, in your imagination or your memory, on the places which you had memorised."

FICTITIOUS PLACES AND IMAGES IN MOTION

> *"Transposing this technique to the realm of interactive digital arts, we can explore the association of images and places as a conceptual construction to investigate different ways to stimulate the senses in a holistic way – sounds, moving images, in dialogue with the most different sensors and digital devices, opening the door to the construction of spaces-imagination built from the interactions, the dialogues. According to Peter Matussek, in the wake of advances in interactive applications, the function of digital technology is no longer described merely in terms of 'storage and retrieval', but rather in terms of the performativeness of images in motion." (Matussek 2001)*

From this perspective we can talk about the construction of dynamic visual memories in mnemonic spaces, images-memories in motion. This question is related to the question of transformation of the concept of artificial memory itself – from an inert depository to dynamic organizations. Connecting images to places (real or imaginary ones) in a dynamic way, the mnemonic becomes systemic, implying a complex network of temporal and spatial connections through crossed meanings, involving dynamic informational flow and updates, which can be presented as moving images and sounds, as an example. Using the conceptual basis of ancient mnemonic – the fundamental relationship between images and places – the goal of the PhD research in course is to propose adaptations of the technique to help modelling chaotic narratives experiences related to the space creating networks between different levels of reality.

In the construction of memory places from the mnemonic rules, we can work with spatial variables such as light, brightness, the distance between memory places, the size of this memory places, exploring the dimensions and having at the same time physical spaces as references. The Architecture here can be related to the construction of a spatial memory – and we can finally talk about a mnemonic immaterial Architecture; mental design processes. Questions related to space and time, here, become "invisible" constraints, existing as the superposed layers built over the material constructed reality. Places we can name fictitious places, imaginary places, inhabited by connections between ideas, references, reflecting memories experienced or not. According to Yates, the art of memory is an invisible art; it reflects real places but is about, not the places themselves, but the reflection of these within the imagination. (Yates 1980)

The reflection in the imagination produced from multiple constructions must reflect the harmony between

mentalities and knowledge. Considering a transdisciplinary approach in the context Nicolescu refers to as "Multi-dimensional Reality", we can "[…] glimpse subject-observer of Reality in the dynamics of the possible unity of all the levels of Reality." (Nicolescu 2002)

From mnemonic's systems, we can observe the possibility of knowledge acquiring – practical, holistic and sometimes even unconscious – concerning multidimensional mental experiences. In this context, this question pointed by Nicolescu related to the power of the "Model of Reality'" in the sphere of reflection and action, remember the importance of distinguishing the words "real" and "reality". In the words of Nicolescu "Real designates that which is, while reality is connected to resistance in our human experience, as discussed above. The 'Real' is, by definition, forever veiled, while 'Reality' is accessible to our knowledge." (Nicolescu 2002)

The access to knowledge can occur from paths, from connections that can be built in the context of a dynamic comprehension that considers different levels of reality, referring to the principles of classical mnemonics based on association, primarily of *imagine et loci*, but here in a augmented way – augmented by the possibility of using moving images, recorded sounds and, beyond, real time media. In the words of Janet Murray (1997, p. 6), "The combination of text, video, and navigable space suggested that a computer-based micro world need not be mathematical but could be shaped as a dynamic fictional universe with characters and events."

What the combination of images in motion and a collection of dynamic content, in the context of new media explorations, as Murray (1997, p. 6) discuss, "[…] adds to our repertoire of representational powers is its procedural nature, its ability to capture experience as systems of interrelated actions. We are learning how to create structure the participation of the interactor into a repertoire of expressive gestures."

A multi level approach to the basic mnemonic concept inter-relating places and media, to support the dynamic access to several levels of reality in digital art explorations, implies a discussion considering the irreducibility of fundamentally different levels of reality. It implies the considerations of subjective and inter-subjective contexts, material and immaterial dimensions, micro and macro perceptions. Despite the fact that we are still in the very beginning of our research exploration, combining theoretical research and practical experiences, the challenge of constructing mnemonic narratives could be relevant not only to deal with immaterial multi-dimensional structures considering question related to space in Architecture.

REFERENCES

BREWER, J. & DOURISH, p. 2008. Storied spaces: Cultural accounts of mobility, technology, and environmental knowing. In: International Journal of Human-Computer Studies. 2008. Available at: http://www.dourish.com/publications/2008/storiedspaces-ijhcs.pdf [accessed 20 june 2010]

Matussek, p. 2001. The Renaissance of the Theatre of Memory. Available at: http://peter-matussek.de/Pub/A_38.html. [accessed 20 november 2006] (Originally published in Janus Review, number 8, 2001)

NICOLESCU, B. 2002. Manifesto of Transdisciplinarity. New York: Suny Series.

MURRAY, J. H. 1998. Hamlet on the Holodeck: The Future of Narrative in Cyberspace. Cambridge: The MIT Press.

YATES, F. A. 1984. The Art of Memory. Chicago: The University of Chicago Press. (Orig. 1966).

YATES, F. A. 1980. Architecture and the Art of Memory. In: Architectural Association Quarterly. London: Londsale Universal Printing. Volume 12, number 4.

Živa Ljubec

PHD CANDIDATE, CAiiA, UNIVERSITY OF PLYMOUTH, UK

RETHINKING THE REALITY SOURCE CODE: AUGMENTED OR FRAGMENTED REALITY?

Henri Bergson assures us we can find a complementary science to the science of the intellect [1], we can find intuition as complementary to intellect if we enter the duration, the process, the becoming. The viewpoint of becoming is intellectually inaccessible. The science of intellect encloses the "becoming" into a "black box". Putting a box around unknown phenomena, "blackboxing" the process, makes that process into an object, a thing – but the process cannot be bounded to a thing – a thing is always only in the process of becoming a thing.

Since the black box is impenetrable by intellect alone, one must be intuitively absorbed in its blackness to experience the process as indivisible, unpredictable (presented to us as inevitable by Henri Poincaré) and incomputable (suggested to us as a possibility by Roger Penrose). While Poincaré [2] demonstrated the impossibility to predict the behaviour of a deterministic but non linear system due to sensitivity of the system to initial conditions, Penrose [3] emphasises the difference between determinism and computability: "There are completely deterministic universe models, with clear-cut rules of evolution, that are impossible to simulate computationally."

But how do we get absorbed into the blackness of the unknown? The process of becoming is present everywhere around us, yet our intellectual conceptions prevent us to experience it fully. The intellect inhabits its own conceptual medium that fragments the becoming in an arbitrary manner, as Bergson explains "[...] we say that there is space, a homogeneous and empty medium, infinite and infinitely divisible, lending itself indifferently to any mode of decomposition. A medium of this kind is never perceived; it is only conceived." [4]

Bergson already indicated that we cannot assume that articulation of movement corresponds to the articulation of Cartesian space-time. Dynamics of the movement cannot be obtained by arranging static snapshots into the cinematographic time scheme. The trajectory of an arrow cannot be divided infinitely as a geometric curve that precisely resembles it – in spite of resemblance the order constituting the trajectory is of different kind. He explains: "… a trajectory is created in one stroke, although a certain time is required for it … though we can divide at will the trajectory once created, we cannot divide its creation, which is an act in progress and not a thing." [5]

Instead of intellectually articulating the movement in the homogeneous medium of space-time Bergson proposes to experience the becoming intuitively, through heterogeneous medium of duration. We protect the process of becoming from the intellectual articulation, from fragmentation, by enclosing it into a black box. The black box, situated within the homogeneous medium of space-time, exposes to the intellect only its exterior – both the received input and the transmitted output are intellectually measurable. The interior, on the other hand, remains immeasurable and cannot be fragmented into concepts – the content of the black box is preserved in duration.

For Bergson the transference between heterogeneous medium of duration and the homogeneous medium of "spatialized" time is based on abstraction: "when we make time a homogeneous medium in which conscious states unfold themselves, we take it to be given all at once, which amounts to saying that we abstract it from duration."[6] He demonstrates the peculiarity of a homogeneous media on the experience of the animal: "... space is not so homogeneous for the animal as for us, [...] determinations of space, or directions, do not assume for it a purely geometrical form, […] the conception of an empty homogeneous medium is something far more extraordinary, being a kind of reaction against that heterogeneity which is the very ground of our experience. Therefore, instead of saying that animals have a special sense of direction, we may as well say that men have a special faculty of perceiving or conceiving a space without quality." [7]

Similar to the distinction between heterogeneous and homogeneous medium is David Bohm's effort to develop a model of pre-space in contrast to space-time. In his article "Time, the Implicate Order and Pre-Space" Bohm talks about the "notion of pre-space expressed in terms of algebraic relationships out of which ordinary space-time emerges as a limiting case." [8] Bohm regards the pre-space as a form of an implicate order from which explicate orders are unfolded: "before we consider the laws of the implicate order we have to provide for the explicate order, on which is based the ocean of space time." [9]

In this discourse Bohm describes the motivation of other physicists to consider the notion of something preceding space-time, especially the vision of Wheeler that was the first to suggest the concept of pre-space: "Wheeler has appealed to the image of space-time as a kind of very fine 'foam' out of which the familiar patterns and forms of continuous space, time and matter emerge as approximations on the large scale level. He is thus regarding this foam as a kind of pre-space ..." [10]

Whatever conceptualization we choose – we choose it within the intellectual realm where we are forced to distinguish between the space-time and pre-space or homogeneous and heterogeneous media. From the intuitive stand point, that is not constrained to homogeneous space-time,

the medium remains one, the order remains the implicate order. It is only by projecting from the heterogeneous onto a degraded homogeneous structure that a medium emerges.

We iterate the projections of homogeneous space-time media onto itself to reduce distances and processing time at each step. From the print media to the Internet media the distances have disappeared but other properties such as connectivity, that enhances the processing power appear. In the course of development of media it becomes more and more apparent that the difference between print media and Internet media, for instance, is only a difference of degree – it remains the projection of intellect back onto itself. The interface of such media is a reflective surface – the information returns in a reduced format. Although by reduction of information the processing power increases and no new information is transferred to the intellect.

To enable a difference of kind in the technological development of media we should consider the transference between homogeneous and heterogeneous media. The interface then should not be one of a film as in the media based in space-time but of a semi-permeable filter that allows for diffusion from space-time back to the order of pre-space. Bergson refers to diffusion, endosmosis, as a principle of "intermingling of the purely intensive sensation of mobility with the extensive representation of the space traversed" [11]. He explains how "between this succession without externality and this externality without succession, a kind of exchange takes place, very similar to what physicists call the phenomenon of endosmosis." [12]

Let us consider the metaphor of osmosis between the two media: let the pure water represent the medium of the intellect and salted water the intuitive medium. Here the solute (water) moves through a membrane that is permeable to the solute but not to the solvent (salt). In this case the molecules on both sides are colliding randomly, but on the side of the container containing salt as well as water molecules, the collisions of water molecules with salt molecules prevent the water to be transferred on the other side of the container. Therefore the pure water or the intellect moves through the membrane into the intuition or the salted water. No effort, no extra energy is needed in osmosis – we get pulled from intellect into intuition at random moments – just as the molecules are randomly colliding.

This spontaneous process of osmosis is mentioned by Marcel Duchamp in his statement on Creative Act: "transference from the artist to the spectator in the form of an aesthetic osmosis taking place through the inert matter." [13] If we examine Duchamp's intuitive experience and his anti-art, ready-mades, etc. we recognise in his art the raw material of intuitive media introduced into the media of the intellect, with outmost care not to reduce information. This raw material makes little sense to a spectator in the intellectual context, but its freedom from intellectual constraints enables the spectator to be sucked through into intuition.

Duchamp subtitled his work "3 Standard Stoppages" as a "Joke on Meter". The raw material in this case are three threads of length of one meter dropped from a height of one meter. The threads are conserved in a box in precise state as they landed on the floor. The chance and change pertaining to the heterogeneous media is preserved and proposed to represent the standard for the homogeneous media. The very proposal of standard based on chance operation is a joke, as is having not one but three (or infinite in Duchamp's terminology) variations of the same standard. The humour arises as the side effect of accommodating the raw heterogeneous material in the homogeneous context.

While a medium that is homogeneous has one measurement standard that is applicable everywhere, the heterogeneous medium consisting of variation cannot recognise a standard anywhere. While the homogeneous medium allows for arbitrary stoppage, the articulation of the process in the heterogeneous medium is not arbitrary. Duration cannot be divided into cinematographic snapshots – stopping the duration of a falling thread at depth of one meter is dropping the thread from the intensity of the process into the extensity of space-time. All three threads are of the same length – to recognise the common quantity is to discard the variation in form of the threads, discard the information, the formation that took place in the process. All that is left of infinite heterogeneous qualities in the homogeneous medium is one quantity ready to be reproduced.

Is Duchamp by merging a standard, fixed quantity with the quality of variation, allowing the intellect to diffuse in the intuition? According to Jean Piaget [14], developmental psychologist, in the early childhood we already intuitively distinguish objects by their topological properties (such as recognition of holes, connectedness of shapes). Only later do children learn to distinguish objects by their geometrical properties (for instance that triangle is not a circle). The learning process in the child is the reverse of historical development of mathematics where the intellect was first driven by geometrical measurement of quantities (such as distances, areas and volumes in the homogeneous medium of space-time), to return only much later in its history to more intuitive studies of topological qualities.

Subtitles of Duchamp's art seem to refer to the raw material from intuitive realm that was not aesthetically adapted to the constraints of the intellect. For instance "Small Glass" with the subtitle "To Be Looked at From the Other Side of the Glass, Close to, With One Eye, for Almost an Hour" and "Large Glass" subtitled as "Delay in Glass" both refer to the side effect of experiencing duration in the context of time. If we enter the plane of the "Large Glass" we are caught in the interval of duration of numerous processes where the bride as the double pendulum is the driving force of creation – her oscillations are chaotic therefore novelty is perpetual – she is the reproduction organ of originality – she poses a paradox only in the intellectual domain where quality is reduced to quantity.

Duchamp achieves the transference of intuition to the spectator by setting up glass as that "inert matter, through which [...] osmosis can take place". The technology of semi transparent, semi permeable glass (furnished with grinders, mills, sieves, filters, pistons, dust, etc.) swallows the spectator into the intuitive realm that is "... to be looked at from the other side ..." from the viewpoint of becoming. The technology of transference through art is an ancient technology, as is the usage of technology of plants that transfers from intellectual to intuitive realm through ingestion of chemical substances. It is the substance, the raw inert matter enriched by the "creative act" or "ritual enactment" that enables the "osmosis".

As long as the contemporary technologies, technologies of the multimedia environment, are based on boundary

surfaces – interfaces, operating within the logic of the cinematographic snapshots, focusing only on the extremities of the interval, on connectivity between extremities, these technologies will not allow for transference between intuition and the intellect but will merely reflect intellect upon itself. To dissolve the impenetrable boundary of the black box is to build new technologies of porous, permeable intellectual structure.

The periphery of the intellect is one-sided, only perceivable within the intellectual context but meaningless for intuition. This periphery should not block the access to the intuitive realm but enable it. If the black box contains the interval between two extremities, measurable extensions, its periphery should distract the intellect from focusing on the extremities and refocus it on the interval itself, on change and chance in duration, on TAO. In Japanese architecture the interval – that is a crude translation of Japanese concept of MA – plays a crucial role. This interval is the clue to augmenting the architecture of extensive (space-time) reality for (pre-space) intensities to flow through.

NOTES

1) HENRI BERGSON. Creative Evolution. Cosimo Classics, New York, 2005, originally published by Modern Library, 1911
2) HENRI POINCARÉ. Science and Hypothesis, Dover, New York, 1952, originally published by Walter Scott Publishing, London, 1905
3) ROGER PENROSE. Shadows of the Mind, A Search for the Missing Science of Consciousness. Oxford University Press, 1994
4) HENRI BERGSON. Creative Evolution. Cosimo Classics, New York, 2005, originally published by Modern Library, 1911
5) ibid
6) HENRI BERGSON. Time and Free Will: An Essay on the Immediate Data of Consciousness. Kessinger Publishing, 1995, originally published by the George Allen & Co., 1913
7) ibid
8) DAVID R. GRIFFIN. Physics and the Ultimate Significance of Time: Bohm, Prigogine and Process Philosophy, State Univ of New York Pr, March 1986
9) ibid
10) ibid
11) HENRI BERGSON. Time and Free Will: An Essay on the Immediate Data of Consciousness. Kessinger Publishing, 1995
12) ibid
13) MARCEL DUCHAMP as cited in Lebel, pp. 77–78
Robert Lebel, Marcel Duchamp, Grove Press, New York, 1959
Session on the Creative Act, Convention of the American Federation of Arts, Houston, Texas, April 1957
14) JEAN PIAGET. The Origin of Intelligence in the ChildRoutledge & Kegan Paul, London, 1953

Luis Eduardo Luna

WASIWASKA, RESEARCH CENTER FOR THE STUDY OF PSYCHOINTEGRATOR PLANTS, VISIONARY ART AND CONSCIOUSNESS. FLORIANÓPOLIS, BRAZIL
www.wasiwaska.org.
HANKEN SCHOOL OF ECONOMICS. HELSINKI, FINLAND

AYAHUASCA AND THE CONCEPT OF REALITY. ETHNOGRAPHIC, THEORETICAL, AND EXPERIENTIAL CONSIDERATIONS

INTRODUCTION

Ayahuasca, a psychotropic preparation created by upper Amazonian people since time immemorial, has been the subject of an increasing number of scientific and popular publications. Today, thousands of people from many countries and walks of life have had experience with it. *Ayahuasca* is the Quechua name, widely used in Peru, Ecuador and Bolivia, and to a lesser extend in Brazil, where it has been adopted by religious organizations that refer to the beverage either as *Santo Daime* or *Vegetal*. It is prepared by brewing the stem of *Banisteriopsis caapi*, a vine of the Malpighiaceae family, and the leaves of *Psychotris viridis*, in the Rubiaceae, locally known as *chacruna* or *chacrona*. In Colombia as well as areas of the Ecuadorean Amazon, *Diplopterys cabrerana*, a vine belonging also to the Malphighiaceae locally known as *chagropanga*, is added to *B. caapi* to prepare a beverage (as a cold infusion or as a brew) called *yajé* (also spelled *yagé*). Some indigenous groups make a drink of only *B. caapi*, in which case I propose to use just the term *caapi*. *Banisteriopsis caapi* contains two main alkaloids, harmine and tetrahydroharmine (some varities contain also traces of harmaline), while both *Psychotria viridis* and *Diplopterys cabrerana* contain the powerful visionary alkaloid dimethyltrytamine (DMT), which is not orally active when ingested alone due to oxidation by the enzyme MAO (monoamine oxidase) in the liver and gut wall. In the presence of harmine, a MAO inhibitor, DMT crosses the brain-blood barrier and attaches to 2A and 1A serotonin receptors in the CNS (central nervous system), causing dramatic perceptual, cognitive and mood changes. *Ayahuasca* (as well as *yajé*) is thus an invention of upper Amazonian indigenous groups, also famous by their discovery of the properties of other plants, such as those involved in the preparation of *curare*, a powerful muscular relaxant, various species of rubber essential to the automobile revolution, as well as the domestication of numerous plants, such as tobacco, and many species of palms. The Amazon area is gradually being recognized as a center of high culture previous to the European invasion that brought unimaginable destruction to the whole continent, with the disappearance within 150 years of around 95 % of its population, mostly due to contagious diseases for which it had no natural defenses (see for example Mann 2005).

Ayahuasca (and *yajé*) is used within a shamanistic complex by numerous indigenous groups of the Upper Amazon with various purposes, such as divination, diagnosing illnesses, transformation into animals or more generally to get in touch with normally unseen realms subjacent to ordinary reality, including visits to the primordial time where humans and animals acquired their present shapes. The concept of reality among indigenous groups suggests a many-worlds interpretation of the real. *Ayahuasca* and other sacred plants facilitate access to these other realities. Its importance is reflected in the myths of origin. Gerardo Reichel-Dolmatoff, who worked among Tukanoan indigenous groups of Colombia (also living on the Brazilian side of the border) collected a myth that I present here in a highly condensed form (Reichel-Dolmatoff (1975: 134–136): The Sun Father is the Master of *Yajé*. He impregnated a woman who looked at Him through the eye. She gave birth to the *Yajé* vine in the form of a radiant child. When she entered the *maloca* or communal house she asked, “Who is the father of this child”. One after the other several men, the ancestors of the Tukano, said “I am his father”, the first cutting his umbilical cord, others grabbing him by his fingers, his arms and legs, tearing him into pieces, each getting his own kinds of *yajé*. With it they also got the rules by which to live, and other things with which to reciprocate: conversations, songs, food, and also evil things. They found their place, their way of life.

Among the Cashinahua and other Pano indigenous groups of Peru and Brazil (who call *ayahuasca nixi pae*) the origin of the vine is in the sub aquatic realm. According to Lagrou (2000: 33) the ancestor named Yube enters the water world of his spiritual kin, the snakes, to marry the beautifully-painted snake woman whose vision had seduced him. He is initiated into taking *ayahuasca* but he fails to resist the fear induced by the visions. He cries out, offending his snake kin, owners of the brew, and escapes, only to be found and wounded by his angry kin a year later. Before he dies, he transmits to his people his knowledge of the brew’s preparation and its song.

In other groups the plants from which the beverage is prepared came from the bones, flesh or blood of mythical beings. Numerous Amazonian indigenous groups consider *B. caapi*, together with tobacco and coca, as highly sacred, one of the greatest gifts to humanity.

Since at least the beginning of the twentieth century *ayahuasca* has been adopted by segments of the mestizo population of Peru, Colombia and Ecuador. In Peru *ayahuasca*, along other plants, often psychotropic, is considered a *doctor*, a *plant-teacher* (Luna 1984, 1986). A new phenomenon took places in the states of Acre and Rondonia, in the Brazilian Amazon. Religious leaders

originally from the mostly Afro-Brazilian Northeast created religious organizations, a mixture of popular Catholicism, in some cases Afro-Brazilian ideas, European esotericism, native Amazonian beliefs and the use of *ayahuasca* as a sacrament. There has been a rapid expansion of these religious organizations in urban centers of the whole country, later with offshoots in other Latin American countries, Europe (mostly Holland and Spain), the United States, and Japan.

Consequently, in the last fifteen to twenty years thousands of people have had access to the *ayahuasca* experience, either by traveling to Amazonian countries, mostly Peru, or by joining the rituals of Brazilian religious organizations, or through practitioners from various backgrounds that offer *ayahuasca* sessions in many countries. Significant religious syncretism has occurred since its use depends on cultural setting. A variety of therapeutic methods have also been the incorporation within or around the ritual setting. Experiences are often extremely powerful, featuring contact with entities, animal or plant spirits, and journeys to other realms. In Westerners the *ayahuasca* ingestion often elicits discussions of a philosophical nature, as people try to somehow make sense of their experiences. Many claim that *ayahuasca* has been a veritable teacher to them, and it is not uncommon that *ayahuasca* is considered as an intelligent being, a mother or grandmother, ideas similar to those found among Amazonian indigenous groups.

It is my intention to present here some reflections on the *ayahuasca* experience based on fieldwork I carried out among some indigenous groups in Colombia and Peru, Peruvian mestizo practitioners, members of Brazilian religious organizations as well as among contemporary westerners from a number of countries. I will also draw materials from my contact with other researchers and my own investigations throughout the years with *ayahuasca*.

THE ROLE OF *AYAHUASCA* AMONG INDIGENOUS GROUPS

The Amazon area is not only biologically, but also culturally diverse. There are cultural differences between the various indigenous groups of the Upper Amazon in terms of social structure and habitats. There is for example a contrast between humans living in nutrient rich vàrzea forests versus those living in relatively unproductive terra firme forests. There are also commonalities, such as the institution of shamanism and what has been called animism, the belief that nature, including rock and winds, rivers and thunder, is animated and intelligent, and that it is possible to establish a rapport with it. Another common belief is that human beings posses various souls, some of which transcends the dissolution of the body and may interact with the living. Certain plants, if taken under certain conditions, facilitate access to normally occult knowledge through altered states of consciousness. These are sacred plants such as tobacco (especially strong varieties of *Nicotiana rustica*), coca (there are 403 described species of *Erythroxylum*), *Anadenanthera peregrina* (locally known as *yopo*, *paricá*, *cohoba* and many other vernacular names), *Virola* species, of which potent psychotropic snuffs are made, and of course the plants involved in the preparation of *yajé* and *ayahuasca*.

Ayahuasca plays an important role in many Upper Amazon societies. Jean Langdon (2000: 21), who worked among the Siona of Colombia, points out the centrality of *yagé* and its rituals to their notion of well being and health, as well as for their acquisition of knowledge about the occult reality. In Siona society most narratives can be characterized as shamanic in the sense that they deal with shamans and/or with experiences in the occult world when dreaming or taking *yagé*. Their universe is characterized by two superimposed realities, "this side", every day reality, and "the other side", each composed of five disks arranged hierarchically beginning with the level under the earth and extending up to the end of the heavens, all populated by entities. Each domain has specific sounds, rhythms, music, smell and colors that can be visited, although these are full of dangers, and the inexperienced can be trapped in the evil spirit domain.

Els Lagrou (2000: 32) reports that among the Cashinahua of Northwest Brazil and Eastern Peru *"Ayahuasca* is a means of transport and of transformation, a means of reconnecting with invisible layers of the cosmos, as well as a way of making present the world and stories told in myth through imaginary experience." Osmani, one of her informants, told her "you have to remember a myth before you drink the brew. If you concentrate well on the story, the story and its beings will appear to you in vision and you will understand the meaning this story has for your own life and experiences. You will feel the story. You will live it." (*Ibid*. p. 33).

This last report goes along similar observations made earlier by Gerardo Reichel-Dolmatoff among the Tukano: "Taking *yajé* is called *gahpí irí-inyári* (from *iri*/to drink, *inyári*/to see), and is interpreted as a return to the cosmic uterus, to the "mine," to the source of all things. It has the objective of reaffirming religious faith, through the personal experience of seeing with one's own eyes the origin of the Universe and of mankind, together with all supernatural beings. On awakening from the trance, the individual remains convinced of the truth of the religious teachings" (Reichel-Dolmatoff 1971: 174).

This idea is related to that of transformation into an animal, a common shamanistic motive in the Amazon area (as well as in traditional societies all over the world). The shaman is thought to transform into a predator of one of the three realms (earth, water and sky), jaguar, anaconda, harpy eagle, or into other animals, in order to perform certain tasks or to experience the world through them, a transformation of identity the Cashinahua referred to as a "change of skin", a symbolic death (Lagrou 2000: 31). This is a radical epistemological possibility difficult to imagine without direct experience. If true, it would mean alternative consciousness and transpersonal perception of whatever is out there, of the "real".

Contemporary members of Brazilian religious organizations that use *ayahuasca* as a sacrament exhibit similar ideas. Among members of the UDV (União do Vegetal), one of these organizations, the central doctrine is embedded in certain *Histórias*, stories or myths, which are recited (not written down) during rituals, the memorization of which would determine the advancement in the organizational hierarchy. I participated in some rituals hearing several times the main central myth, the *História da Huasca*, in fact a variation of a myth of origin found among indigenous groups and among mestizo practitioners by which the origin of the two plants involved in the preparation comes from the

bones and blood (or simply from the grave) of human beings. I was struck at how vividly the story unfolds in the mind while under the effect of the brew, how easily it would be to believe the myth to be true. *Ayahuasca* may in fact reinforce any religious beliefs, hence it's potential for being adopted by other religious organizations and for facilitating syncretism. Mestizo shamanism in Peru is the result of the syncretism of popular Catholicism, Amazonian and Andean ideas (as well as some European esoteric elements). Furuya (1994) has pointed out the gradual *umbandization* (from *umbanda*, an Afro-Brazilian religion) of CEFLURIS, the largest of the Brazilian religious organizations that use *ayahuasca* under the name *Santo Daime*. Afro-Brazilian ideas are even more evident among members of Barquinha, an organization I studied carefully (Luna 1995). They have the concept of "incorporation", different from "possession" in that the person remains conscious of his normal self. Members are believed to be able to incorporate four types of spirits: *pretos velhos* (old and wise black slaves), *caboclos* (the spirits of Indians), *erés* (the spirits of children), and *encantados* (princes or princesses "enchanted" or transformed into certain animals). This is close to the Amazonian idea of transformation. Once while harvesting the vine in the forest with a group from *Barquinha*, one of the men told me the story about one of the members that once was gripped by high anxiety while harvesting the vine up about twenty meters above the ground. He solved the problem by "incorporating" the spirit of a *preto velho*, a black slave, and descending easily to the ground. This suggests that accessing such states of consciousness may have had an evolutionary advantage.

SUPERNATURAL ENTITIES

Shamanism, which implies altered states of consciousness and the activation of what seems as common archetypes beyond ethnic and cultural differences, may have a role, as Winkelman suggests (2010) in the emergence of modern humans. This may have its roots back in ancient primate ritual heritage from our evolutionary past. Winkelman attempts "to understand the original manifestation of shamanism and the diversity of manifestations of shamanistic phenomena produced by social influences on our innate potential for ritual, alterations of consciousness, and endogenous healing responses."

Contact with supernatural entities of some sort is documented since Upper Paleolithic time, the so-called therianthropes, part human and part animals, found in rock art of all continents (Hancock 2003: 69–93). Lewis-Williams (2005: 10) explores the possibility that people from that period "harnessed what we call altered states of consciousness to fashion their society and that they used imagery as a means of establishing and defining social relationships". The same author summarizes thus one of the chapters in his extraordinary research on Upper Paleolithic Art: "… most researchers have consistently ignored the full complexity of human consciousness and have concentrated on only one slice of it and made that slice the defining characteristic of what it is to be an anatomically and cognitively fully modern human being. Here I examine interaction of mental activity and social context: how, I ask, notions about human experience that are shared by a community impinge on the mental activity of individuals and how does socially controlled access to certain mental states become a foundation for social discrimination?"

When I was doing fieldwork among the mestizo riverian population of the Peruvian Amazon I was marveled as what seems to me full sincerity when for example a fisherman described the mermaids he saw once in the river, or when another man vividly told me of the apparition at night of a frightening huge water snake, the *Yakumama*. Mermaids, dolphins turning into human beings in order to seduce, bird spirits announcing a death in the family, are all to be expected given the shared notions about human experience of that society. Actual apparitions are usually extraordinary events, often connected with altered states of consciousness, the same way that UFO apparitions often are (see Vallee 1969, Hancock 2005). Culture has been, no doubt, a powerful influence in the way we perceive the world and ourselves. It is well known that anthropologists sometimes are afflicted by the so-called ethno-specific illnesses of the human groups they study. At the same time this would also explain why Westerners (except children) seldom see fairies. They are said to live in the forests. Most westerners live in cities, far from nature, and their notions of reality do not accept this kind of belief beyond a certain age. I read fairy tales to my mother when in her deathbed, and I know of psychologists who read those stories to very old people. The results are often simply extraordinary, as if we would in this way connect with something deep inside us with which we were in touch as children.

NEW INFORMATION

There is no doubt that experiences with *ayahuasca* and other psychointegrator (a term coined by Michael Winkelman) plants and substances bring forth not only ecstatic but sometimes terrorific emotions. Information may also come from long forgotten or repressed memories. New information may come from such channels as de-familiarization, when everything is seen as new, most eloquently expressed by Huxley (1954) in his experiments with mescaline: "I was seeing what Adam had seen on the morning of his creation – the miracle, moment by moment, of naked existence". This is something I have often experienced, "discovering" new qualities in what was familiar, objects, plants, or human beings. When anthropologists go to the field, their first notes are extremely valuable, they see what is new in the societies and in the environment more clearly. As time goes by, what was strange becomes familiar, and therefore nearly invisible. To have the chance of seeing all once more like "in the beginning" (in mythical times) is a precious gift.

When asked about the origin of their body painting, their art, or other products of their culture, indigenous Amazonian groups often refer to sacred plants. "We see this in the visions." "These are songs we learn from the plant spirits". *"Ayahuasca* taught us the right way of living". Michael E. Brown reports that among the Aguaruna of the Alto Río Mayo, in Peru, "men continue to recognize the important role that the visions obtained in their youth had in promoting their moral education and physical well-being, and in helping them make the transition to the responsibilities of adult life (Brown 1985: 59). According to Lagrou (2000: 31) "The cosmic snake Yube has mastered all possible appearances of form, color and design that can

be perceived by human eyes. All the phenomena of this world are said to be inscribed in the designs of its skin and can be visualized through the (metaphoric) ingestion of his blood (*nawa himi*) or his urine (*dunuc isun*), which are the names of *ayahuasca* in ritual songs." Among members of the Brazilian religious organizations, the songs sang during the rituals called *hymns*, by those organizations that call the sacrament *Santo Daime*, or *chamadas* by members of the UDV (União do Vegetal) and dissident groups, are said to have been "receive" from the astral plane, not composed by the founders or their disciples.

ALTERED STATES OF CONSCIOUSNESS

Consciousness in general was until recently almost a taboo in academic circles. Roger Penrose (1994: 8) states, "a scientific world-view which does not profoundly come to terms with the problem of conscious minds can have no serious pretensions of completeness. Consciousness is part of our universe, so any physical theory which makes no proper place for it falls fundamentally short of providing a genuine description of the world." Western rational thinking, as pointed out by Frecska (2005), marginalizes or even pathologizes ASCs (altered states of consciousness). It considers them deviant states, unable to differentiate between disintegrative and integrative forms, and cultivates only the basic state of consciousness. It is unfortunate that the theme of ASCs is still anathema in most learning centers, even more so in therapeutic practice.

In a much-quoted paragraph, William James (1929: 378–9) affirms:

> *"Our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted from it by the filmiest of screens, there lie potential form of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus and at a touch they are there in all their completeness, definite types of mentality that probably somewhere have their field of application and adaptation.* ***No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded****. [emphasis mine].*

The belief in spirits is nearly universal across ages. Shall we just dismiss, in the name of advanced rational thinking, the existence of other intelligent realms right here under our noses, only were we able to attune ourselves to these other realities? Roberts (2006) proposes the idea that that our minds function in many mindbody states. Consequently he rejects what he calls the "singlestate fallacy": the erroneous assumption that all worthwhile thinking, behaving, and emotions occur only in our ordinary, awake mindbody state. Could it be then that there are mental state-bound realities, only manifested under appropriate circumstances? Traditional societies usually consider the cosmos as multilayered, normally depicted by anthropologists as worlds above and below middle plain, this reality. Could it also be conceived as multidimensional from within, depending on the state of consciousness? Is not this perhaps the reason why ideas, events and imagery during our dreams (as well as often in the hypnagogic state previous to falling asleep) lose all their meaning immediately after waking, even though apparently our other self, the one in the dream, found no contradiction? Dreams and visions are equated in many cultures. Perhaps visions are a form of conscious dreams. According to Winkelman (2010) the physiological properties of ASC (altered states of consciousness) indicate that the visionary experiences are produced by the information capacities of the lower brain systems, and tap into the dream capacity, an ancient mammalian adaptation for integrating information in the pre-language symbolic capacity represented in the visual system

Neurons alone aren't sufficiently complex to explain all brain phenomena and provide a computational model for thought. Roger Penrose and Stuart Hameroff (Penrose 1996) propose that consciousness emerges from biophysical processes acting at the subcellular level involving cytoskeletal structures. Consciousness is attributed to quantum computation in cytoskeletal proteins organized into a network of microtubules within the brain's neurons. Ede Frecska (2005) proposes the existence of a dual foundation of knowledge. The first one would be the ordinary, perceptual-cognitive-symbolic, which is neuroaxonally based, is electrochemical (based on local effects), and relies on sensory perception, cognitive processing, and symbolic (visual, verbal, logical) language. It performs modeling, with an implicit split subject-object: it peaks in Western scientific thinking. The second one is the direct-intuitive-non local, its medium being a subneural network, such as the microtubular network, which connects the whole body, from head to toe, and based on nonlocal correlations, so small (measured in nanometers) that they are close to quantum physical measures. The cytoskeletal matrix, with 10,000,000 more units than neurons and may be immense enough to contain holographic information about the whole universe via non-local interaction. It is ineffable, experienced directly, without subject-object split, perhaps the realm from where shamans and mystics, the masters of nonlocality, after rigorous training and symbolic death, get their information and powers when in altered states of consciousness. This direct-intuitive-non local knowledge is perhaps "The Forgotten Knowledge" in western civilization, deemed nonexistent by academic Western science.

MIND AND MATTER

Among some indigenous groups of the Amazon there is the idea that people take *ayahuasca* not "to see the future", but "to create the future". Brown (1985: 60), who worked among the Aguaruna of Peru writes: "The future exists as a set of possibilities that are given shape by the effort to bring them into consciousness within the visionary experience." Rafael Karsten, who worked among the Shuar of Ecuador, writes that in the victory feast, celebrating the acquisition by a warrior of a new *arutam* spirit by slaying an enemy, both men and women, even half-grown children, take part: all "who want to dream" being allowed to drink *natéma* (*ayahuasca*). The drinking has a ceremonial character throughout. During the victory feast celebration, half a litre of *natéma* was drunk by each person three times followed by vomiting. The participants did not eat or drink before the ceremony nor after they had slept and dreamed. After the ceremony the dreamers left the house and remained in shelters in the forest where they slept until the afternoon.

After they woke up they took a bath in the river and returned to the house where they told the older Indians what kind of dreams and visions they'd had. The object of the drinking of natéma at the victory feast was to dream of the house of the slayer and his closest relatives: "surrounded by large and flourishing plantations of manioc and bananas, they see his domestic animals, his swine and his hens, numerous and fat, etc. At the same time the persons who have drunk the sacred drink will be benefited themselves, being purified from impure and disease-bringing matter, and gain strength and ability in their respective work and occupations." (Karsten 1935: 345).

Fericgla (2000), who worked much later among the Shuar reports that when they take *ayahuasca* and have visions referring to their lives, this is because what they see is either happening to them, or is about to happen. If they see something negative to happen in the future, they take the brew again and try to correct it. If they are not able to do so, and they again see the same thing, they look for a shaman stronger than them in order to be able to change what would happen. In other words, they have the belief that the visions influence reality.

I have witnessed extraordinary synchronicities in this respect happening to contemporary westerners. It is as if having a vision had enough power for the universe to conspire towards its completion. Perhaps mind and matter are two apparently contradictory manifestations – like the wave and particle properties of light – of an underlying ultimate reality. Perhaps consciousness is an essential part of reality. It is urgent to have a deep understanding of this paradigm in a world of increasing environmental degradation, alienation from the natural world, and consequently prone to violence and/or depression. Whatever may reconnect us with our past, with nature, and with inner self is of vital importance for our own survival.

Shamanism is ultimately about healing in the highest sense, a reintegration of all levels of existence. Ede Frecska (2008: 146-–8) sugests to extend the biopsychosocial paradigm in contemporary medicine proposed by George Engel (1997), including also the spiritual dimension: therapy *sui generis* is reintegration *in toto* on biological, mental, social and spiritual levels, the identification with higher realms of reality, with the psyche, with the community, and at the end with an entity above community (i.e., environment, nature, Universe, Mother Earth, etc. depending on culturally determined worldviews). A process contrary to what has happened to modern humanity who lost first the connection with any kind of supernatural world, then got alienated from nature and from his/her community, including the extended family, being reduced to an often depressed individual devoid of their dreams and creativity. A concept of reality restricted to the measurable material world is certainly impoverishing.

BY WAY OF CONCLUSION

It is not at all strange that plants with the properties of altering the mind have been considered sacred by traditional cultures. It is now forty years since my first encounter with such a powerful medicine. I have witnessed and participated in hundreds of sessions in different settings, and I have been in touch in one way or another with most of the people who have been doing research on the subject. The most important questions have not been answered. What is the nature of the worlds and the entities one may encounter in such experiences? What is their level of reality? Are they simply "creatures of imagination", as proposed by Reichel-Dolmatoff 1975: 5)? Do they have any kind of reality outside our own experience? Are certain plants really intelligent, and able to communicate with us through real "communion" (more convincing than the Catholic eucharist)? Are the supernatural powers residing in these plants "organic chemical constituents that allow mortal man to communicate through visual, auditory and other hallucinations with the spirit world that controls every aspect of man's earthly existence"? (Schultes 1975). Is the brain more a receptor that the originator of all experience? Are we really able to communicate with normally unseen intelligences, perhaps in other dimensions? Are spirits real? Is there a multidimensional ecology of beings? What is the relationship between mind and healing? What about those very common motifs, the serpents for example? Are they part of our mind, and therefore universal?

Under the effects of *ayahuasca* and other psychointegrators the mind seems to open to higher, more comprehensive dimensions. One is confronted in a very real and profound way with the mystery of existence, of life and death and the great enigma of the relationship between mind and reality. Few people are left indifferent to such experiences, if done in a respectful, controlled setting and under the guidance of an experienced facilitator.

I would like to present here, as way of illustration, two accounts of recent experiences I had with *ayahuasca*:

"I see a strange floating irregular nearly transparent bubble with alien organs. I cannot make sense of it. It comes towards me slowly from the left. I let it happen. It stops in front of me. I enter it with my intention, look at it from inside with total clarity. I go through it and enter a world of threatening beings in the shape of brownish intricate surfaces with protruding tentacles that go for my forehead. I hum and lift my arms protecting it. From the right, almost out of my visual field, another attack. I search for my rattle with eyes closed. To open them would mean defeat. I rattle, blow, hum, they seem unaffected by what I do and persist in their attack. In front of me I have the perfect perception of three-dimensional space. Tall shapeless beings, perhaps five of them, occupy the space that expands in front of my closed eyes. I think of the water from the Sangoma Valley, in South Africa, that was brought to the house by a friend. My wife had used it on me on a previous occasion in which I was attacked, with nearly instant results. I called Rodolfo, a friend, to bring the bottle that is with my wife. Almost immediately after my request there is a change in the visions. There is light to my left; the creatures all seem to look towards the light, pointing at something to come. There is the feeling of reverence in the strange creatures of this world. Is it due to the bottle that is coming? The bottle comes to my hands. I continue with my eyes closed. Open the cork, moisten my fingers, there is now color, flowers spring out, movement towards the sacred water, almost formless beings rushing towards the

moisture that crossed from this reality to the other world. Then come the gifts, like other times, small objects, perhaps some sort of jewelry, nothing I can fully recognize as anything concrete corresponding to my world. The "beings" rush towards me, appearing in several irregular layers. I am in a more familiar territory. I have seen this many times before. I am less interested and begin to pay attention to the exterior world. I open my eyes, still seeing forms in the darkness. I am in both worlds, but more here then there. Everything is all right. I close again my eyes. I am again in a world that seems to be made of a light brown continuous material, almost like a kind of plastic. I have the feeling of intelligent presence. There seems to be some sort of technology. I think: "How could I keep this channel open, how could I always get in touch with "them", as they seem to be ahead of my own time, they know what is coming (the principle of divination?)" The thought of an implant comes to mind but no; I do not wish anything inside me. I would not allow this to happen. I think of finding out about lottery numbers, and faintly I see some numbers appearing, but then reject the thought. This is cheap; this is not the way divination should be used, for personal gain. I am taken again by the thought of communication with this other reality. But then I come back, I have to take care of other people, choose the appropriate music for the moment. This reality is calling me now."

On another occasion I had the following experience:

"Even with my eyes open I can see with almost dismay, once more, the black ants that were almost constant in my visions of some years ago. I close my eyes. There they are against a familiar background that seems to be underground. This has been my specialty, the visitation to subterranean worlds. I follow a row of ants going somewhere. I notice that without any effort my mind is following and I begin to zoom in. I see the ants bigger than any other time before. I continue zooming, or better, zooming is taking place almost without my volition. I get closer and closer to some sort of nodules that separate small areas from others within that, somehow lightly illuminated organic environment. I get excited. The zooming continues, and I am now seeing tiny organelles that become bigger as I continue getting closer and closer. I begin a narrow deep descent and then suddenly I am in a new place. It is lighter here. I can see everything with total clarity, sharper than everyday vision, mediated by the eye anatomy. Round, relatively bright, softly colored organisms covered by some sort of moving filaments approach me. The feeling is good. No danger here. I let them come very close, just a few centimeters from my inner eyes. More come behind. I let them also come to just what seems as millimeters from my eyes. I have no apprehension. They are curious. Again, presents. That is at least what I believe they are, as they come with all these objects that I cannot recognize as anything belonging to my world.

Then something is happening to my left. The attention of all those beings turn towards something coming from a seashore that I see upside down, as I am lying down. I understand I have to get up. I get to my knees, facing a sort of wall with sort of pre-Columbian anthropomorphic figures. I have the feeling that there is a ceremony, and it has to do with me. I am humbled by the situation. I tell them that I do not want anything for myself, but I would like to be able to help other people. More than asking to be a healer, I simply ask that healing may take place through me. Two figures, which I cannot distinguish well, are above me, carrying some sort of flags, or floating veils. I am struck by how when I move my head the whole perspective changes, as if I was really in a three dimensional space. If the visions were projected on my vision, the same image should follow my head. This is not the case. I can turn around. There is space all around me."

In another experience I saw what riverian people of the Peruvian Amazon call the *Sachamama*, the great serpent of the jungle realm, powerful yet completely indifferent to my presence. In yet another I was riding the *Yakumama*, the great serpent of the water realm, down the bottom of a lake. There is often a certain consistency, familiar places that I visit again and again. I know more or less their geography. In some cases I get to places and see people who seem to go on their own business without paying any attention to me. "Just one more tourist", they seem to think. In others I am welcomed, there is a rapport, they seem eager to meet me. How can I explain such experiences to myself in a satisfactory way such experiences?

First of all it is obvious that stories like this are universal. Experiences like these are deeply engrained in human physiology. They are part of us. I was simply experiencing aspects of reality in remarkably similar ways to those of human beings across time and space (Winkelman, personal communication). There are plenty of similar contemporary accounts of journeys to other realms with various (potentially) psychointegrator agents, including of course *ayahuasca*. The Internet is of course an extraordinary source in this respect. These extraordinary inner worlds, beyond normal imagination, seem to be too organized to be disparate constructions of the mind under the effect of alien alkaloids, just hallucinations without any value. The feeling is rather that these plants and substances are extraordinary tools for the study of consciousness. They may give access to infinite treasures of beauty and mystery, perhaps to the source from which all human construction finally emanates.

BIBLIOGRAPHY

BROWN, Michael F. 1985. Tsewa's Gift. Magic and Meaning in an Amazonian Society. Washington and London: Smithsonian Institution Press.

FERICGLA, José María. 2000. Los Chamanismos a Revisión. De la Vía del Éxtasis a Internet. Barcelona: Kairós Ed.

FRECSKA, Ede. 2008. "The shaman's journey: supernatural or natural? A neuro-ontological interpretation of spiritual experiences." In Rick Strassman, Wojtowitz, Slawek, Luis Eduardo

LUNA, and EDE Frecska Inner Paths to Outer Space: Journeys Through Psychedelics and Other Spiritual Technologies. Vermon: Park Street Press.
FURUYA, Yoshiaki. 1994. “Umbandização dos Cultos Populares na Amazônia: A Integração ao Brasil?” in Possessão e Procissão. Religiosidade Popular no Brasil, ed. by Hirochika Nakamaki and Américo Pellegrini Filho. Osaka: National Museum of Ethnology.
Hancok, Graham. 2005. Supernatural. Meetings with the Ancient Teachers of Mindkind. London: Century.
HUXLEY, Aldous. 1959 (first published in 1954). The Doors of Perception and Heaven and Hell. London: Penguin Books.
JAMES, William. 1929. Varieties of Religious Experience. New York: Modern Library.
LEWIS-WILLIAMS, David. 2002. The Mind in the Cave. Consciousness and the Origins of Art. London: Thames and Hudson.
LUNA, Luis Eduardo. 1984. The Concept of Plants as Teachers Among Four Mestizo Shamans of Iquitos, Northeast Peru. Journal of Ethnopharmacology 11: 135–56.
1986. Vegetalismo: Shamanism Among the Mestizo Population of the Peruvian Amazon. Stockholm: Almqvist & Wiksell International.
1995. “A Barquinha. Una Nueva Religión en Río Branco, Amazonía Brasileña.” Acta Americana 3:2: 137–151. Stockholm.
LUNA, Luis Eduardo & AMARINGO, Pablo Amaringo. 1991. Ayahuasca Visions: The Religious Iconography of a Peruvian Shaman. Berkeley: North Atlantic Books.
MANN, Charles C. 2005. 1491. New Revelations of the Americas Before Columbus. New York: Alfred A. Knopf.
PENROSE, Roger. 1994. Shadows of the Mind: A Search for the Missing Science of Consciousness: Oxford: Oxford University Press.
REICHEL-DOLMATOFF, Gerardo. 1971. Amazonian Cosmos. The Sexual and Religious Symbolism of the Tukano Indians. Chicago: The University of Chicago Press.
1975. The Shaman and the Jaguar. A Study of Narcotic Drugs Among the Indians of Colombia. Philadelfia: Temple University Press.
ROBERTS, Thomas B. 2006. Psychedelic Horizons. Exeter, UK: Imprint Academic.
SCHULTES, Richard-Evans. Forward to Gerardo Reichel-Dolmatoff The Shaman and the Jaguar. A Study of Narcotic Drugs Among the Indians of Colombia. Philadelphia: Temple University Press.
VALLEE, Jacques. 1969, 1993. Passport to Magonia: On UFOs, Folklore and Parallel Worlds. Chicago: Contemporary Books.
WINKELMAN, Michael. 2010. Shamanism A Biopsychosocial Paradigm of Consciousness and Healing. Santa Barbara: ABC-CLIO Publishers.

Ryohei Nakatsu

INTERACTIVE & DIGITAL MEDIA INSTUTITE,
NATIONAL UNIVERSITY OF SINGAPORE
idmdir@nus.edu.sg

LOGOS, PATHOS, AND ENTERTAINMENT

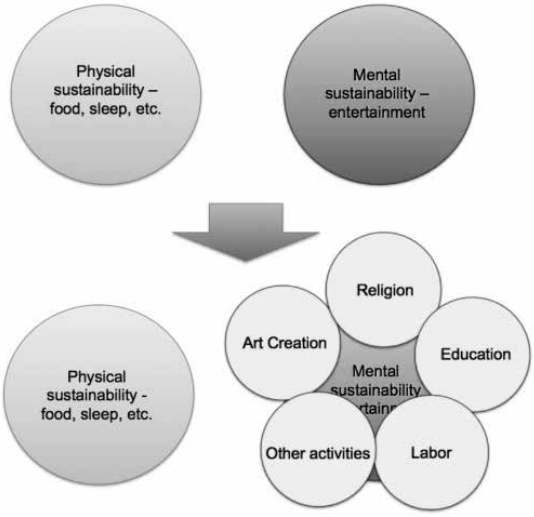


FIG. 1: *Changes in the physical and mental sustainability of human beings*

1 INTRODUCTION

New network, information, and media technologies are rapidly changing our society, including human relationships, lifestyles, and communication. Entertainment is one area that these new technologies are strongly influencing. One good example is games. Playing computer and video games is a common daily activity for people, especially for younger generations. In particular, online games have become very popular in both the U.S. and Asian countries. Another good example is communication. People communicate with their families and friends through e-mail, mobile phones, texting, Twitter, and other means. Until the 1980s, communication media such as telephones were mainly used for business communication. Today, however, communication extends beyond business conversations and has become a form of everyday entertainment.

There are many discussions on these phenomena, but most of them merely observe what is happening in society and report the fact that more people are spending more time on these new forms of entertainment. Unfortunately, however, there has been little consideration of the basic reasons why these new forms have been accepted by people all over the world. One fundamental question is whether this is a totally new phenomenon within our long history. Another question is which aspects of society are changing through the introduction of these new forms of entertainment, and how much those aspects are changing. Another, more difficult question is the direction to which such entertainment is leading our society. In other words, what will be the future of our society, where people are expected to spend more time on entertainment than they do now.

In this paper, I try to answer these questions by starting from the question of what entertainment is. It will be clarified that over the long course of human history, people have tried to clearly separate logical and emotional aspects of our behaviors, in other words, the logos and pathos, respectively. Consequently, we have succeeded in confining the great power of emotion to only the private aspects of our lives.

New media such as games and mobile phones, however, have strongly affected this relationship between logos and pathos and have partly destroyed it. Today, people are showing the emotional aspect of their behaviors even in formal situations. A more distinctive point is that this tendency is more obvious in Western countries.

Finally, given these considerations, I anticipate the direction to which our society is headed. I also discuss what we should do to maintain our basic identity as human beings.

2 THE NATURE OF ENTERTAINMENT

2.1 What is entertainment?

At least one billon people currently face starvation all over the world. For these people it is crucial to obtain food for tomorrow or even today. This problem has been one of the most serious topics at global conferences and meetings such as World Economic Forum [1].

On the other hand, in developed countries new types of entertainment have emerged, such as chat on mobile phones and games on game systems and PCs. People in those countries are tending to spend more and more time enjoying such forms of entertainment. There have been significant concerns and complaints about this trend. The basic logic of such complaints is that compared with other human activities, such as education, business, industrial production, and so on, entertainment is not productive. In other words, the complaints suggest that entertainment is only a waste of time.

An important question, however, is whether this is actually true, when the established entertainment industry is huge and includes the movie, game, sports, and other businesses. Another question is why the demand and markets for such entertainment are so huge. The issue of whether entertainment is a waste of time clearly requires care.

2.2 Origin of entertainment

What is happening now is not a totally new phenomenon. In earlier times, human life was simple. Humans farmed or hunted to survive. When people were not occupied with these tasks, they entertained themselves by various means. In other words, we can say that food is strongly

FIG. 2: *Logos and pathos*

related to our physical sustainability, yet at the same time, we can point out that entertainment is related to our mental and spiritual sustainability.

Then the era of civilization began. People introduced various novel types of activities, such as art, business, learning and teaching, and religion. Because of these activities, entertainment came to be considered as a secondary activity in human life. Although entertainment remained a certain part of our everyday life, it has not been considered an essential part. **FIGURE 1** illustrates these changes in our physical and mental sustainability.

2.3 OUR LIFE AND ENTERTAINMENT

Even now sometimes that fact that entertainment is an important part of our life becomes apparent. Consider passengers on an airplane. During a flight, most people sleep, eat, or entertain themselves by watching movies, reading novels, and so forth. Only a few people work during a flight. This means that in a simple situation, our lifestyle consists of three basic activities: sleeping, eating, and entertaining ourselves.

What is happening now is, in one sense, an "entertainment renaissance." The introduction of new technologies, especially interactive technologies, into traditional forms of entertainment has totally renewed and strengthened those forms. People are again noticing the basic strength and meaning of entertainment and recognizing that it is a substantial part of their lives. This is a key point in trying to understand such substantial issues as the role of entertainment in developed and developing countries and the future direction of entertainment.

3 ENTERTAINMENT IN DEVELOPING AND DEVELOPED COUNTRIES

3.1 Entertainment in developing countries

The importance of entertainment in developing countries has been underestimated. As described above, entertainment has been, from its origin, an essential part of our life. In one sense, its importance is almost second only to survival. Even though few people in developing countries use PCs, mobile phones, or game systems, they intuitively know the importance of entertainment. This is the key point.

Leaders and academics in the developed world have wondered and struggled with how to introduce a higher level of development into developing countries. For example, it was considered difficult to teach the importance of activities such as education, religion, and business to people facing starvation. What is happening in developed countries, however, can simplify this. In developed countries an emerging phenomenon of the merger of entertainment with other activities such as education and business is observed. In other words, many activities commonplace in the developed world are becoming forms of entertainment. This is, in one sense, a fundamental change in business model for various human behaviors and activities. Another important point is that this new business model works even without utilizing cutting-edge technologies.

3.2 An entertainment renaissance

In other words, the border between entertainment and activities such as education and business is going to disappear. This is why the current phenomenon could be regarded as an "entertainment renaissance."

This means that many serious human activities contain the essence of entertainment and could be enjoyed. This could make it easier to promote such activities as various types of entertainment to people in developing countries. This would lead to greater participation in activities such as education and business, because these activities could now be interpreted as a form of entertainment and would thus be more familiar.

On the other hand, we should carefully examine the new forms of entertainment enthusiastically accepted by younger generations in developed countries. The question is whether these are actually new types of entertainment or not. When we examined new entertainment types in detail, we found that most of them have their origins in older forms of entertainment. For example, the experience of playing role-playing games is almost the same as the experience of reading fantasy novels. Another good example is new types of communication. Communication via chat, texting, or Twitter, using mobile phones, is actually a reshaped form of everyday conversation among family members and friends.

This means that new information and media technologies have reshaped traditional entertainment while keeping the same basic concept. Because of this, while the game market expanded with surprisingly great speed in the early days of video and PC games, it has now apparently reached a certain level of saturation, and various new forms of entertainment face the problem of sustainability. We should probably understand the core concept of entertainment and the future directions of the game industry by studying how people in developing countries entertain themselves.

4 LOGOS, PATHOS, AND ENTERTAINMENT

4.1 Logos and pathos

What is happening in developed countries is actually deep and substantial. Through the emergence of new forms of entertainment, our societies and lifestyles are experiencing a fundamental change.

Here, we recall the ancient Greek origin of Western philosophy. Plato compared the human spirit to a carriage with two horses and one driver in his Republic [2]. Here, as illustrated in **FIG. 2**, the driver is a metaphor for the rational aspect of the human spirit, called the "logos." On the other hand, the two horses are a metaphor for the emotional aspect, called the "pathos." The former could be linked to the formal parts of our lives, and the latter, to the private parts. Furthermore, one of the horses represents passion, while the other represents the instinctive aspect of emotion.

Plato admired logos as the basis of rational human behaviors. As for pathos, passion was admired as the source of creative behaviors, but instinct was despised as

undeveloped and representing the dark side of behavior. Plato also expected that logos could control the dark side of pathos, instinct, with help from the bright side of pathos, passion.

This definition and statement by Plato determined the initial direction of philosophy and morality in the Western world. Since the ancient Greek era, people have been trying to separate logos and pathos in their lives. In other words, they have been trying to separate the logical and emotional aspects of living.

4.2 Formal and informal aspects of life

In the long history of Western society, starting with Plato's philosophical considerations, logos has been considered related to the formal aspects of human behaviors, in social situations and in business scenes, for example. On the other hand, pathos has been related to the private aspects of human activities. Westerners have long and eagerly sought to clearly separate these two aspects. In addition, people have tried to emphasize the importance of logos while neglecting pathos.

Asian languages also make such a distinction. For example, in Japan the formal aspect of behavior is called *honne*, while the informal aspect is called *tatemae*. In terms of *honne* and *tatemae*, Japanese people have been accused of having a double standard of behavior. As the above observation of Western society shows, however, this is not correct. All humans have both formal and private aspects of their behavior, in other words, *honne* and *tatemae*. The problem is that because people in Asian societies have not been very conscious of these two aspects, they have not been good at clearly separating these two types of behavior. In other words, Japanese people could be said to present confusion of the formal and private aspects of behavior.

One good example is that of the former prime minster, Mr. Asoh. He once declared at the Japanese parliament that he was actually against privatization of Japan's Post Office when he was a member of the previous Koizumi cabinet. The problem with his behavior is that, because he was a member of the cabinet and this formal decision was made within the cabinet, it was inappropriate to express his private opinion in a formal situation. What was worse was that he thought he was being honest by expressing his private opinion and could not understand why people accused him of expressing *honne*.

4.3 Approach between logos and pathos

In contrast with the above situation, the introduction of new media and forms of entertainment has invaded deeply into our lives and changed our behaviors. It was long considered civilized and sophisticated to act logically and hide the emotional aspect of behavior. Now, however, people tend to expose their emotions even in the formal parts of their lives. A good example is means of communication. It has become common for people to communicate even with close friends or family members by using mobile phones or PCs even during meetings or during dinner. This is surprising because communication with people close to us has typically been a private, emotional behavior.

This means that in our everyday life emotional behaviors have again become influential and can play a major role, after long years of separation between logos and pathos and the higher priority of logos over pathos in formal situations. In one sense, our behaviors are returning to those in ancient times. Moreover, this phenomenon has another important aspect. In observing the phenomenon, we notice two fundamental, distinctive features. First, human behaviors in the Western and Eastern worlds are becoming more similar. Second, human behaviors in developed countries and developing countries are also becoming more similar. In other words, differences in human behavior styles between Western and Asian countries, and between developed and developing countries, are disappearing. People are beginning to share the same ways of thinking and cultural principles and rules. In one sense, this is good because it will lower barriers between different people and countries. At the same time, however, we are losing the local features of cultures, which have long been preserved over the course of history.

5 MEDIA AND ENTERTAINMENT

5.1 History of media

It is important to consider why we are losing the separation between formal and informal aspects of our behaviors. As indicated above, the arrival of new media strongly influences this phenomenon.

To explain this, consider the history of significant media inventions. The two most impactful media inventions are written characters and the invention of printing typography. These remarkable inventions have enabled people to think, memorize, discuss, and describe by using language. In other words, these inventions have made people more left-brain dependent. It is noteworthy that this mainly happened in Western countries, as shown by the long history of Western philosophy, as represented by Plato. What happened in Asian counties is somewhat different. Somehow people did not try to clearly separate rational and emotional actions. The reason for this is an interesting research topic and is discussed elsewhere. In any case, however, for Asian people the concept of separation between logos and pathos has not been so clear.

5.2 Influence of movies and telephones

Two more impactful inventions in the recent history of media are telephones and movies. Today we tend to focus on recent inventions such as video games, mobile phones, e-mail, blogs, and Twitter. Unfortunately, we have almost forgotten the major impact telephones and movies have had on the basic changes in our behavior.

Before the invention of the telephone, the formal and emotional aspects of our behavior were clearly separated. For emotional behaviors, mental distance and special distance were closely related. When we are together with people to whom we are close, such as family members and friends, we expose our private, emotional behaviors. We have a strong instinct to be connected with familiar people. Before the invention of the telephone, however, when we were spatially separated from such people, because we had no method of communicating with them, we had to hide our emotional aspects and behave formally, as in business situations. Then, after the telephone was invented, it enabled us to be connected to familiar people even though we were spatially separated. Since that time, people have gradually tended to mix the formal and emotional aspects

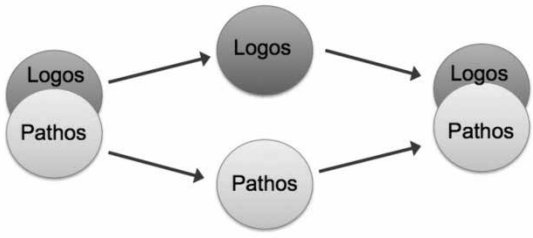


FIG. 3: *Changes in the physical and mental sustainability of human beings*

of our lives. This is the fundamental reason why now, even during meetings, dinner, or other situations, people want to continue communicating with people to whom they are close by using mobile phones and smart phones. In other words, the telephone has initiated confusion between the rational and emotional aspects of our behavior. The development of mobile phones and other recent media is only accelerating this trend.

The invention of movies has had a similar effect. Before the invention of movies, people were trained to be left-brain dependent, and reading and writing were the major intellectual and communication behaviors. The invention of movies, however, introduced images as an important communication medium. Images have a strong power to directly influence the emotional part of the brain, the right brain. Therefore, after long years of training to rationally use the left brain, people began to depend more on using the right brain. This means that people have gradually become emotionally dependent instead of rationally dependent. The recent trend toward excessive use of computer graphics and animation originated with the invention of movies. These newer technologies are merely accelerating the trend.

5.3 Future of entertainment and media

As described above, after long years of separation between logos and pathos in human behavior, these two aspects are moving back together, we can expect that they will merge again in the future, as illustrated in **FIG. 3**.

Regarding what this means for the future, it can be pointed out that an interesting and important phenomenon would happen. That is the behaviors of Westerners and Asians could become more alike and even become identical. As described above, in Asian countries a clear separation of logos and pathos has somehow not reached conscious awareness or discussion. Because of this, Asian people have been accused of being underdeveloped as human beings. In Western countries, however, people's behaviors are becoming more like those of Asian people [3]. A good example is communication behaviors. Today, even during such formal events as classes, meetings, discussions, or dinner, people often tend to check e-mail on their mobile phones and try to communicate with people to whom they are close. When a plane lands and arrives at a gate, the first thing many people do is take out their mobile phones, turn them on, and check e-mail or start calling family members. In this regard, there is no distinctive difference between the behaviors of Westerners and Asians.

5.4 Future of human beings

In one sense, this phenomenon is good, as various gaps between the West and Asia have long been headaches for cultural understanding. We can probably regard this as a bright side of globalization, but on the other side there is a danger. Each country and each ethnicity has developed its own culture, resulting in a rich variety of cultures all over the world. This is a major human accomplishment. The merger of behaviors between the West and Asia, however, could destroy this rich variety of cultural differences among different countries [4]. It is difficult to anticipate a future in which there are no cultural differences and people all over the world are connected to the network all the time and repeatedly receive and send shallow text messages. It could be like the virtual reality shown in the movie *The Matrix*.

There is another interpretation of the merger of logos and pathos. Animals lack any distinction of logos and pathos; rather, the two are tightly merged. Therefore, the merger of logos and pathos might mean that human beings will revert to an animal-like state. This would be another bad outcome, in which we return to a very ancient time when human beings were not yet well developed and our behaviors were almost the same as those of other animals.

Instead, we probably should learn from our history. In both the Western world and the Asian world, there were eras when logos and pathos were not so clearly separated, yet people used to live fully human lives. For example, in the era of Homer's *Iliad* [5], logos and pathos were not clearly separated but the characters behaved honestly, bravely, and heroically. We should compare the behaviors of heroes and heroines in classical antiquity with those of modern people and determine from such comparisons what our behaviors should be in the future.

On the other hand, in Japan we have *The Tale of Genji* [6], the world's oldest novel. In one sense, the behaviors of the heroes and heroines in this novel are somewhat similar to those of current, younger generations. In the classic novel, men and women frequently exchange short poems, called *waka*, as a method of communication. Similarly, young people today frequently exchange short messages or post to Twitter accounts by using mobile phones. Probably the biggest difference, then, between these ancient and modern behaviors, is that the exchange of poems is a form of art creation, whereas message exchange using e-mail and Twitter does not involve art. The major question is how we can ennoble the communication behaviors of people in the network age. A good outcome would be to achieve the way of life described in *The Tale of Genji* but over a network using new media.

6 CONCLUSION

Various types of new entertainment, such as games and mobile phone applications, have been introduced into our society, rapidly changing our lifestyle. It seems we are in the era of chaos, and it is not certain what kind of lifestyle and society we will have in the future. In this situation, it is important to carefully observe the phenomena happening around us and extract findings, trends, tendencies, and so forth.

In this paper, by trying to answer the question of what entertainment is, I have tried to clarify the basic trends underlying various surface phenomena. It was first clarified that human behavior consists of two aspects, the logical

and the emotional, and that entertainment is closely related to the emotional aspect.

Then, I discussed how Plato tried to separate the logical and emotional aspects of human behavior. Plato's efforts originated the long history of Western philosophy. Because entertainment is closely connected to the emotional side of behavior, it has been considered an informal aspect of behavior and thus hidden, even though entertainment is an essential aspect of our lives, like eating and sleeping.

It was also pointed out that the recent development of information and media technologies has raised the importance of the emotional aspect of life. In this sense, we are experiencing an entertainment renaissance. On the other hand, this means that logos and pathos, which have been clearly separated through history, are approaching each other and could even merge together.

There are several dangers in this trend. One is that the cultural differences that have enriched human history might fade away. Another is that human behaviors could revert to those of animals.

So far, there are no clear solutions to overcoming these dangers. One way to address this difficult situation, however, is to look back and learn from our history. There have been several eras when logos and pathos were joined together, as in the times described in the *Iliad* and *The Tale of Genji*. By learning from the behaviors detailed in these famous classics, we could perhaps imagine the future to which we are headed.

REFERENCES

1. http://www.weforum.org/en/index.htm
2. PLATO: The Rebublic. Penguin Classics.
3. TOSA, N.: "Cultural Computing". NTT Publishing Co. (2009).
4. NAKATSU, R.: Future of Communications Empowered by Technologies. Ohm-sha publishing Co. (2010).
5. HOMER: Iliad. Hackett Publishing Company, Inc. (1997).
6. MURASAKI, S.: The Tale of Genji. A Divition of Random House, Inc. (1976).

Enrico Nardelli

DEPT. OF MATHEMATICS, UNIV. ROMA TOR VERGATA, ITALY
nardelli@mat.uniroma2.it
http://www.mat.uniroma2.it/~nardelli/

A SOFTWARE BASED INSTALLATION TO ASSIST SELF-REFLECTION

1. INTRODUCTION

The evolution of Information technology (IT), from the invention of the computer (Eniac, 1946), to the Internet (1977), to multimedia and mobile phones (1990s), and to social media (2000) has proceeded in such a way that IT has now impact on the life of half of the world population (6 billion in 2009: 1.5 billion people using the Internet, 3 billion people using mobile phones).

IT certainly helps individuals to maintain connections with other persons, hence IT can give the feeling of connectedness between human beings, even if in many cases these interactions are rather shallow relations.

In many important cultures in the world it is believed that the true "self" of every person is eternal and indistinct from the supreme spirit. Hence it is believed all things in the universe are connected. E.g. see the voice Hinduism on Wikipedia. And from connectedness it derives the need of accepting life events without refusing them as external to us.

Can technology improve the sense of connectedness of somebody to the rest of the universe? In this paper we propose to use IT technology to help people come to a better grasp of these wholeness and acceptance concepts.

Digital technologies have long been used to enhance the expressive palette by which artists represent emotions and feelings (Ascott 2003, Popper 1997, Paul 2008) and digital artworks are increasingly being considered part of mainstream IT (Oates 2006, Trifonova et al 2008).

In Nardelli (Nardelli 2010) we have presented a classification of interactive digital artworks based on some of their more meaningful IT characteristics. An interactive digital artwork is any artwork where digital technology is an essential component and which is interactive. The definition of our classification convinced us of the importance not just to reflect on these themes as observers but also to enter ourselves in this area and to try to deal first-hand with the subject matter.

Hence, elaborating on the issues presented in call for paper of the 11th edition of the Consciousness Reframed we have defined and built an IT-based installation aiming at improving the capability of a person to accept what happens in her life without being too emotionally disrupted by unexpected events.

In the installation the person sees an image of herself that is processed on the basis of some regular laws having as input the values read by some sensors from the person: e.g., body temperature, skin humidity, and conscious actions: e.g. finger pressure, hand movements.

Hence there is a regularity and predictability in the evolution of her image: the person may be able to obtain a desired processing effect by means of a conscious manipulation of sensors.

But from time to time some obscure processing rule is inserted in the processing and a completely unexpected result is obtained which is then very difficult to control. If the user succeeds in regaining control then regularity is recovered again, and the person returns in the normal cycle of interaction. Even if now the image of herself may be in an unexpected state the processing is back under her full control. And then again destiny, under the form of unpredictable events, perturbs the course of actions.

It may happen that one of these unexpected events is completely uncontrollable: this catastrophic process leads to the complete destruction of the image. The person is therefore induced to reflect on the need of accepting what happens in the universe as an un-escapable characteristic of life. And from this computer assisted self reflection she can regain a sense of unity with the universe.

The installation is based on the manipulation of the pixels of a self image by means of the "Processing" language (Processing 2001) and it is available for interaction on the home page of the author. The source code is also available under a Creative Common license from the author's website.

In the rest of the paper we first shortly describe the classification framework for interactive digital artworks which prompted us to design and implement this installation and then describe in more detail our installation and its architecture. We conclude with an evaluation of what we obtained.

2. THE CLASSIFICATION FRAMEWORK

In this section, for the purpose of giving the overall context of our work, we provide just a short description of our classification framework, which is described in more detailed elsewhere (Nardelli 2010), together with comparison with previous work and a discussion on how it has been derived and validated.

An information system is conventionally seen as a system which *processes* a given *input* to produce a desired output. We consider an Interactive Digital Artwork (IDA, in the following) in the same way, as a system which receives a certain input, called content in this context, and as a reslult producing the output intended by the IDA author (i.e., the artist). It is also helpful to consider the process producing the intended output as if it were a function in a mathematical sense, that is an abstract "device" which at each time instantly transforms its inputs into its outputs according to its mathematical specification. The dimensions of the classification are:

– *content provider*: who produces the raw material processed by the IDA

– *processing dynamics*: which kind of variability has the processing itself
– *processing contributors*: which are the sources affecting the dynamics of processing

For each dimension we now provide different values, that are the labels of our classification. We use the term artist to denote the person or team who has invented and realized the IDA, audience to denote the human beings actively and consciously providing any kind of input to the IDA, and environment to denote any passive or not-conscious entity present in the environment surrounding the IDA.

Regarding the *content provider* dimension, the source providing the content to the IDA can be either the artist or the audience or the environment. This dimension has therefore three possible values, or points, and an artwork can be labeled, with respect to this dimension, with one, two or all the values.

Regarding the *processing dynamics* dimension, the processing function of an artwork can be static with the passing of time, or it can be dynamic, that is changing as time passes. Note that the change considered here is the intrinsic change of the processing function, not a change in its input parameters. But the input parameters may determine, partly or wholly, such a change. In the case of a dynamic processing function, we consider three values, in mutual exclusion, to be used for a better characterization of the artwork:

– *predefined change*, where changes to the function follow the plan defined by the artist;
– *casual change*, in such cases where changes to the function derive by random choices, even in the case of the set or the domain of the possible choices, have been completely predefined by the artists;
– *evolutionary change*, where changes follow an unpredictable path defined by the evolution (in a biological sense) of the processing function itself.

The single value for the static case plus the three above values for the dynamic one give a total of four values (points) for this dimension. An artwork can be labeled with exactly one of these values.

Regarding the *processing contributors* dimension, the elements driving the content processing can be self-contained in the IDA (hence, what the *artist* has put directly inside the artwork affects the processing), or these elements can arrive at the IDA through the interaction with the context the IDA is placed within (that is, the processing function has additional input parameters causing modifications to how the content is processed). In the latter case, the providers of values changing the behavior of the processing function can be the *audience* or the *environment*. The dimension has therefore 3 values (points) and an artwork can receive one, two or all the labels.

Note that, in strictly mathematical terms, inputs to a function are all equals. However, the distinction between "content provider" and "processing contributors" dimensions has no compelling mathematical reason. But from the artist viewpoint this differentiation is an important one, since it distinguishes between what she has directly inserted in the artwork and what arrives from the outside of the IDA, both in terms of the raw material and its processing function.

FIG. 1: *The self-image during the application of easily reversible effects*

FIG. 2: *The self-image during its corruption by an irreversible effects*

FIG. 3: *The self-image altered by a hard-to-reverse effect*

Also, an artwork labeled both under "content provider" exclusively with artist and under "processing contributors" exclusively with artist is not an IDA, since it has no elements of interaction at all. But as long as, in at least one of these two dimensions, the artwork is labeled with at least one more label, then it is an IDA.

Our classification overcomes the limitations of previously presented ones and explicitly targets IDAs by means

of an approach that it is rooted on the standard input-process-output view used for discussing Information Systems.

3. INTERACTING WITH THE INSTALLATION

Set-up phase: The interaction with the installation starts with a set-up phase where the initial image of the user is captured via a webcam.

Easily-reversible effects: The set-up phase is followed by a for-ever cycle where some *easily reversible effects* are applied to the captured image and displayed to the user. These manipulate the image according to the various input sensor values in a way that can be easily reversed from the user by simply inverting the input. For example, the brightness of the image can be driven by the amount of light read by the light sensor. The closer a light source is to the sensor, the brighter is the image. When the light source is turned away, the effect is reversed; the image gets darker.

The easily-reversible effects intend to represent facts of life over which one is able to have full control. The interaction cycle time is quick enough not to be boring, but slow enough to make the user aware that he/she is in control of what happens. See in **FIG. 1** an example of a self image during the application of easily reversible effects.

Irreversible effect: Representing the fact that some events in life are impossible to control and have catastrophic consequences for our future, after some initial grace time the system will decide, with a low probability, to start applying an *irreversible* effect to the image, randomly selected by the system among the available ones. This irreversible effect, having a low probability of happening, once started will lead the image to a complete degeneracy, without any possibility for the user of controlling or stopping or reversing it. To start over the whole process from the beginning is the only possible action now. As a departure from the viewpoint of the installation as a metaphor of life events, the user can at any time during the interaction activate a given key on the keyboard to force the whole process to start over from the beginning.

See in **FIG. 2** an example of the previous self image during its corruption by an irreversible effect.

Hard-to-reverse effect: But life is not just either easy to control events or unrecoverable events. At a random time instance during the for-ever cycle, the installation will stop applying the easily-reversible effects and will start applying a *hard-to-reverse effect*, randomly selected by the system among the available ones. The user will then have to try to control this hard-to-reverse effect. This is not easy since the relation between user inputs and the actions happening in the system is not apparent. The system provides an audio signal as a partial feedback to the user attempts.

Hard-to-reverse effects intend to represent the fact that for some events of life it is not completely clear whether it is possible to control them and how this control can be obtained.

If the user succeeds in controlling the hard-to-reverse effect (that means to prevent it from further altering the image) then the system will acknowledge her ability by switching back to the phase of application of easily-reversible effects, which are then applied to the image in the state reached when the user was able to control the hard-to-reverse effect.

If the user is not able to control this hard-to-reverse effect then the image is progressively altered until a completely unrecognizable state. The user can then start over the whole process (as previously described) or – as a further departure from the viewpoint of the installation as a metaphor of life events – can "force" the system to go "backward in time" and artificially reversing the action of the hard-to-reverse effect. She thus regains a possibility of learning how to control it. But this possibility is paid with an increase of the probability of incurring into the irreversible effects. Hence one reflects on the fact that nothing comes for free in life.

See in **FIG. 3** an example of the self image of **FIG. 1** altered by a hard-to-reverse effect.

4. IMPLEMENTATION, EVALUATION AND CONCLUSION

The installation has been implemented by Francesca Capri, Roberto Patrizi, and Giovanni Ricci, students in the Master Degree in Informatics at the University of Roma "Tor Vergata", as part of their exam project for the course "Person-Computer Interaction" taught by the author.

Students, having a technical background, were initially confused by the artistic/social requirements of the installation. They had to work hard both to learn the Processing language, explicitly for this project, and to grasp and assimilate the meaning and the purpose of the installation. At the end of a 4-weeks full time effort with daily interaction with the author, their evaluation is fully positive. They have appreciated the new technical knowledge obtained, the highly interactive work setting, the cooperative climate established where differences of viewpoint were eventually reconciled to a common vision, and the enlargement of perspectives they have obtained by working in this artistic domain so far away from the standard uses of IT. The author also has a positive evaluation of the experience, since the continuous interaction with the students/implementers greatly helped him in focusing his thinking on the installation.

With respect to our work on classification of IDAs (cfr section 2), the value for the *content provider* dimension of our installation is *audience*, since the raw material for processing is provided by the spectator; the value for the *processing dynamics* dimension is casual change, since both the filter to be applied in each phase is randomly chosen and some filters execute random choices; the value for the *processing contributors* is audience, since the spectator provides inputs to modify the behavior of the processing function. Hence our classification is able to correctly classify our installation.

In the future we plan to add to our installation effects so that the value of the processing dynamics dimension is evolutionary change, since this is an item of our classification to which we are not aware of the existence of digital artworks and since we feel it can offer interesting artistic and technical challenges.

REFERENCES

ASCOTT, Roy (2003), Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness, University of California Press, edited by Edward A. Shanken.

NARDELLI, Enrico (2010), "A classification framework for interactive digital artworks", In 2nd International ICST Conference

on User Centric Media. (UCMedia -2010), September 1–3, 2010, Palma de Mallorca, Spain.
OATES, Briony J. (2006), “New frontiers for information systems research: Computer art as an information system”, European Journal of Information Systems, 15: 617–626.
PAUL, CHRISTIANE (2008), Digital Art (World of Art), Thames & Hudson
POPPER, Frank (1997), Art of the Electronic Age, Thames & Hudson
PROCESSING [online]. (2001) [Accessed 26 June 2010]. Initiated by Ben Fry and Casey Reas. Available from: <http://www.processing.org/>.
TRIFONOVA, Anna, et al (2008), “Software engineering issues in interactive installation art”, International Journal of Arts and Technology, 1(1): 43–65.

Simeon Nelson

PROFESSOR OF SCULPTURE, UNIVERSITY OF HERTFORDSHIRE, UK
www.simeon-nelson.com

TOWARD A CYBERNETIC ONTOLOGY OF THINGYNESS

"Creation is only the projection into form of that which already exists" (Shrimad Bhagavatam, III.2, XI.10)

This reflection on ideas in my artistic practice like all my writing emerges out of my work and is organized into what is hopefully a coherent picture. My writing is as full of uncertainty as I am, it is by its nature agnostic; a narrative rather than a polemic, possibly inter-subjectively false, victim to the finitude of my own particular weltanschauung. I will discuss two systems within my practice, Infinitesimal and *Paratekton* and contextualise the ideas in them within current issues in consciousness and being.

As an artist I seek a sense of the real; I am perplexed by the question of what it is to be. My practice skirts apprehensions of what it is to be in various guises and investigates the three magisteria of science, art and religion for the accounts of reality they provide in different but sometimes overlapping ways. The limits of science, what it is possible to know, leads to the question: what is knowledge? What can a human being in all his or her finitude know and what types of knowledge do the three magisteria furnish? As Steven Jay Gould pointed out in his essay "Nonoverlapping Magisteria", science and religion work well within their own domains but when the epistemologies are confused and science and religion invade each other's territory the results can be disastrous. A literal reading of the Christian creation myth as a factual account on one hand and on the other, scientism: science as an ideology that would supplant religion, deny the validity or existence of anything that does not fall within the definition of a testable hypothesis or is not mathematically quantifiable are both what Karen Armstrong calls metaphysical mistakes. The current climate of polarization between "the rational" and "the irrational" is exemplified by the scientistic atheism of Richard Dawkins, A.C. Grayling, Christopher Hitchens and Stephen Weinberg amongst others which seems to have intensified in response to the growth of biblical literalism and need for absolute certainty in some contemporary forms of the Abrahamic faiths, forgetting Augustine's third century reminder that the bible is a poetic/symbolic text not a factual one. [1]

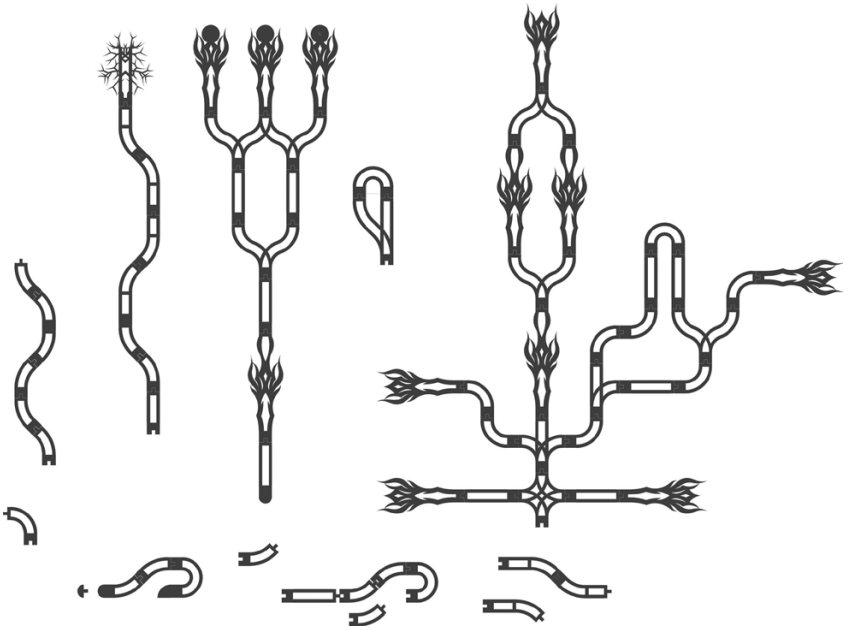
In its denial of the validity of the irrational, the poetic or the emotional, this new atheism seems to be as dogmatic and rigid as the fundamentalism it so bitterly opposes which is antithetical to an open enquiry and to artistic practice. My worldview needs both the "book", the grandeur and poetry of the creation myth and "the book of nature", the wonder of the observable world as explained by science. I am indebted to both Mythos and Logos – for me, truth is approached in the reconciliation of the rational and the irrational. As Ingmar Bergman said "I throw a spear into the dark – that is intuition. Then I have to send an expedition into the jungle to find the way of the spear – that is logic."

"All the explanatory arrows point downward, from societies to people, to organs, to cells, to biochemistry, to chemistry, and ultimately to physics." (Stephen Weinberg)

In the argument between reductionism and holism, reductionism holds that complex phenomena including consciousness are nothing more than the sum of their parts; that the explanatory arrows always point downward. Holism sees wholes – entities, agents and phenomena as self-ordering and teleological, not explicable from the sum of their parts. I think that we are in the midst of a shift from a reductionist to a post-reductionist paradigm and that this is coincident with shifts in the relationship between science and religion. Significant rethinking is occurring in the history of science and religion away from a largely conflictual account toward more intriguing and complex interpretations. Complexity theorist Stuart Kaufmann in *Reinventing the Sacred* speaks of a world of ceaseless creativity that continuously transcends its initial conditions, is far more than the sum of its parts. He sees this as immanent in phenomenal nature. I agree but would say that there is an aspect of the mystery of being that is not addressed by his view.

"The reason why our sentient, percipient, and thinking ego is met nowhere within our scientific world picture can easily be indicated in seven words: because it is itself that world picture." (Erwin Schrödinger 1961: 36)

Erwin Schrödinger who was deeply influenced by Vedantic cosmology and metaphysics expresses, contra reductionism, the idea that knowledge is an artifact of human consciousness and is therefore ill-placed to account for that which created it. Some religious traditions see humanity's relationship to God similarly. Paul Tillich saw God as that ultimate reality which underlies all, – "the ground of being". In his theology God does not exist rather God is the source of all that exists. I have a sense of God as the substrate from which everything arises; I see humans and all creatures as isomorphic with God and in my work I use the analogy of epitaxy, a term used in solid state physics to describe the way that the orientation and structure of crystals is determined by the substrate from which they arise. God is a useful taxonomic metaphor for the first branch of the system, if you zoom out far enough you can apprehend this, though paradoxically this is also to be perceived in "the dearest freshness deep down things" like, for example, a rose bud.



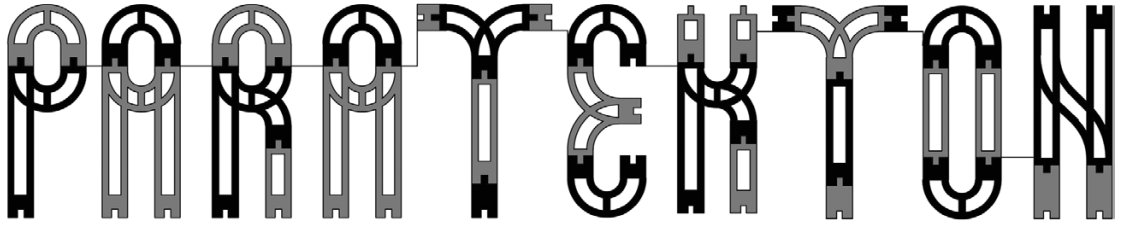


FIG. 1-3

FIG. 1 *ParatektonElements:*
Paratekton (from Greek – beside or beyond the structure) is a highly organized spatial system that incorporates something of the rigour of industrial design but has a freedom and a "recombinant openness". In Aristotelian metaphysics, the inmost soul of things, persons and entities is taken to be that which remains unchanged during the process of transformation which characterises a thing's fleeting manifestation in the world, hence when Gertrude Stein says "a rose is a rose is a rose" I take it to mean that a rose is a rose is a rose whether bud, pollen, bloom or withered seed head. The changing phenomenal manifestation of the rose is not the substance (standing under) of the rose. So with my sculptural systems I am trying to get beneath their "thingyness" and think of them as a process, a system. You might wonder whether the lumpy corporeality of sculpture is the best medium for such an apprehension, I do to! But there is a wonderful reassurance, solidity, concreteness in this thingyness which can only contain a glimpse of that elusive effulgence at the base of reality. *Paratekton* is a river flowing through and underneath its vegetal nodes which could be seen as its phenomenal events. It is a carrier wave, a message carrying signal. It is not a thing, it is an event, a process of becoming, or it is a thing that lays its own substance (in the Aristotelian sense of an inner unchanging property that stands under illusory appearance) bare, it could be stripped of events and would be unaffected. The soul, or substance of a thing could be said to be topological, containing the properties of form within it that are prior to and will remain invariant during the distortions and transformations of the thing's manifestation in the phenomenal world. This is similar to Goethe's notion of the urpflanze or "primal plant" expounded in the *Metamorphosis of Plants*, whose essential characteristics define all plants.

FIG. 2 *ParatektonElements2:*
The ways in which *Paratekton* goes together are almost infinite, its randomness is part of its meaning as is letting go some of the authorship and sharing the possibility of creating a virtual infinitude of possibilities with the audience. One could see *Paratekton* as a cybernetic system linking artist, artwork and viewer in a loop of interactive intentionality. As Gregory Bateson put it in *Steps to an Ecology of Mind* "in no system which shows mental characteristics can any part have unilateral control over the whole. In other words, the mental characteristics of the system are immanent, not in some part, but in the system as a whole" (1972: p. 316).

FIG. 3 *ParatektonFont:*
Paratekton fuses notions of time with space and matter in a way inspired by Leibniz's monad, a metaphysical corpuscle with properties of "ultimate thinginess" that constitute the irreducible elements of reality. The monad is analogous to but radically different to the atoms or corpuscles of the mechanistic cosmos of Newton and Descartes. In *Process and Reality* Alfred North Whitehead apprehends Leibniz's monads as "occasions of experience" that conflate space, time and matter into events, manifestations of the universe. In my work I try to connect, go beneath the appearance of separation to that fork in the branch of reality from which seemingly separate phenomenal events spring.

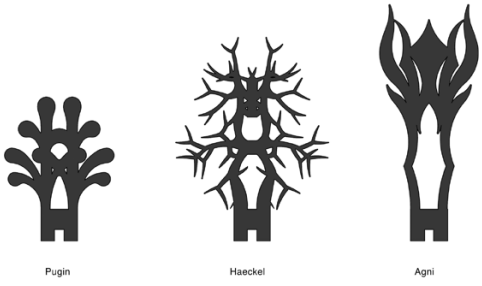


FIG. 4–5

FIG. 4 *ParatektonDetail:*
So *Paratekton* is a multi-dimensional non-linear manifold; many possible realities pulse through its recombinant system. It embodies many dimensions in its gross anatomy including the linear in that it follows stochastic paths determined by the user; the graphical, i.e it is made from shapes drawn in 2D on a CAD programme; the three dimensional in its overall spatial arrangement and implicitly the fourth dimension in the growth patterns that it is in the process of generating. Like much of my work it could be seen as a snapshot or a frozen moment within an unfolding cybernetic system whose final form is unknowable but whose purposive action may be discerned by the way it interacts with its co-creators: artist and viewer/collector/curator/installer etc.

To return to the idea of the separate magisteria, borrowed from Gould and also referenced from the theosophy of Rudolph Steiner who saw art, religion and science as three intertwined ways of apprehending reality, Paratekton has three ornamental nodes: the *Pugin*, a transcription of one of Augustus Pugin's neo-Gothic ornaments, the *Haeckel*, a transcription of one of German nineteenth century biologist Ernst Haeckel's drawings of a diatom, and the Agni, named for the Vedic god of fire. These three motifs symbolise the proper separateness and also the overlaps of science religion and art into what I call a coherent 'contiguum' that allows a unified world picture to flourish.

FIG. 5 *PuginHaeckelAgni:*
How to visualize this effulgence at the base of matter? In Vedic metaphysics, the separateness of things in the phenomenal universe is an illusion (maya) and to be enlightened is to understand that the distinction between self and

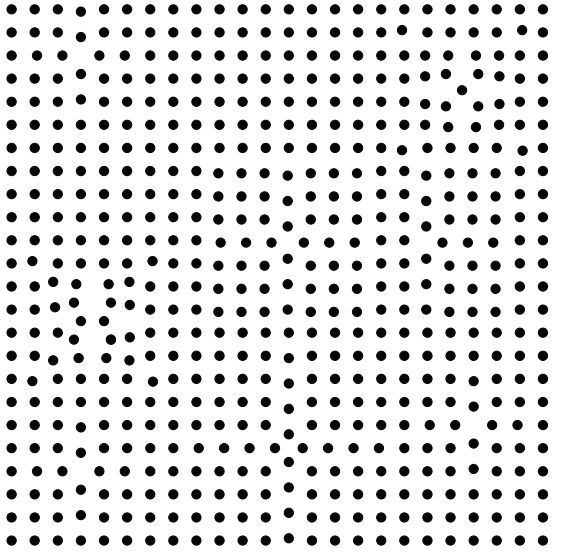


FIG. 6

universe is a false dichotomy. *Infinitesimal* is a wall drawing in the form of a grid of dots which is occasionally interrupted by the insertion of an extra dot that pushes the immediately surrounding dots aside or a missing dot which pulls the immediately surrounding dots toward the empty space. The viewer is confronted with a swirling universe of perceptual possibilities. The slight imperfections in the grid send optical ripples over walls, ceiling and floor, undermining the solidity of the architecture and inducing a vertigo and perceptual confusion in the viewer. It references the illustrations of crystal lattices found in a science textbook. These lattices are invariably contaminated by missing or extra corpuscles that disrupt the perfection of the grid. At the molecular scale there is no solidity, no "thing" just atoms vibrating about their loci attracted and repelled by fundamental forces of nature.

FIG. 6 *Infinitesimal image:*
The intent of *Infinitesimal* is to question the separateness of the points so that they are perceived as a field of events rather than a collection of separate entities in the same way as what we perceive as physical bodies in the cosmos are manifestations, concretions of the created order held in dynamic balance with each other by gravity, electromagnetic and nuclear forces depending on what scale they occur at. In terms of the implications of quantum theory these fragments popping in and out of existence could be said to be a system containing all possible worlds, latently waiting to manifest.

In this essay I have used the image of branches, of forks at different scales as if attempting to hang my argument on a huge tree. This arborescent analogy is useful in organizing my thoughts but could be flawed by a scalar determinism if taken too literally. What I have called the effulgence at the base of reality is to be glimpsed at any branch of this isomorphic tree.

NOTES

1) see http://www.st-edmunds.cam.ac.uk/faraday/Issues_Alexander.php for fruther discussion of this in terms of my practice

REFERENCES

ARMSTRONG, Karen, 2010. The Case for God, Vintage

EAGLETON, Terence, 2009. Reason, Faith and Revolution, Reflections on the God Debate

HAECKEL, Ernst, 1902. Kunstformen der Natur, Dover Books

von Goethe, Johann Wolfgang, 1790. The Metamorphosis of Plants, MIT Press

GOULD, Stephen Jay, 1997. Non-overlapping Magisteria Natural History 106 (March): 16–22.

KAUFMANN, Stuart, 2009. Reinventing the Sacred, Basic Books

LEIBNIZ, Gottfried Wilhelm, 1714, The Monadology, Forgotten Books

SCHRÖDINGER, Erwin, 1930. My View of the World, Oxbow Press

STEIN, Gertrude, 1913. Sacred Emily, Geography and Plays

TILLICH, Ivan, 1957, Systematic Theology Vol. 2, University of Chicago Press

VENKATESANANDA, Swami, 1989. Shrimad Bhagavatam State University of New York Press

WHITEHEAD, Alfred North,1929. Process and Reality, Princeton University Press

Jennifer Kanary Nikolov(a)

jenniferkanary@yahoo.com,
jennifer@roomforthoughts.com
www.roomforthoughts.com

HALLUCINATIONS, AN EXISTENTIAL CRISIS?

HALLUCINATIONS AS A SYMPTOM OF MENTAL ILLNESS

The most common hallucinations are auditory. It is thought that about 70 % of people diagnosed with schizophrenia hear voices.[1] Accounts of hearing voices have been recorded for over 2000 years. Well-known voice hearers of history are Socrates, Mohammed, Pythagoras and Joan of Arc. It is believed that today about 5 % of our population hear voices on a regular basis. (Leudar and Thomas, 2000, pp. 7–12). The Dutch Psychiatrist Marius Romme discovered that large numbers of Dutch citizens hear voices without needing psychiatric treatment. Bentall's book *Madness Explained* (2004), inspired by a conversation with Romme, made a strong contribution to shattering the modern myths surrounding the experience of hallucinations as a symptom of madness.

> *"I really like your research on hallucinations, Richard. But the trouble is, you want to cure hallucinators, whereas I want to liberate them. I think they are like homosexuals in the 1950s – in need of liberation, not cure."*

Bentall's book went on to collect compelling arguments that psychiatric diagnoses are in essence meaningless when it comes to madness, in particular as symptoms such as hallucinations occur in the 'sane' as well as the 'insane' (Bentall, 2004, p. 511).

Accounts of hallucination experiences are increasingly taken seriously. In his book *Psychoses without Psychiatry* (2000, free translation), psychologist Thomas Bock reports on people who survive without psychiatric treatment. He describes how hallucinations seem to function more like dreams do, as a means to help deal with life. As he suggests, bad hallucinations should be regarded as having a bad dream, interfering in a waking state, making psychosis just another state of human consciousness, like a fever of the imagination attempting to heal the human psyche (Bock, 2000, pp. 363–364). Seeing madness as part of human nature is a big step, but in today's world the social representation of a homeless person is still more acceptable than that of a chronic mental patient (Bock, 2000, p. 127). If the fear of madness is a much bigger problem than madness itself (Bentall, 2004, p. 511), how can we find ways to deal with madness? Why is our society so poorly equipped in dealing with it? How to be less afraid of what might be a natural occurrence of human nature? In order to develop concepts to help answering these questions, it might be useful to take a look at alternative ideas about the nature of our reality. Radical Constructivism might be such a framework.

HALLUCINATIONS AND RADICAL CONSTRUCTIVISM

Radical constructivist theory advocates the view that any so-called reality – in the most immediate and concrete sense – is the construction of those who believe they have discovered and investigated it. In other words: there is a high probability we have created the world we live in, but for some reason have become unaware of the fact that we have created it. This has led us to believe that our invented reality exists as an objective reality outside of ourselves, making it the fundament of our worldview (Watzlawick, 1984, p. 10).

This means that from a radical constructivist point of view, one might see a hallucination as a reality that is no more real or unreal than other perceptions. From this perspective, the whole world could be a hallucination, rendering the distinction between sanity and insanity problematic. Radical constructivists ideas are not new. In 1836 Bierre de Boismont, who was a catholic, believed in more than what an eye can see and an ear can hear. He objected to subjective experience being treated as merely "a play of imagination" and somehow less real and valuable than "objective" perception (Leudar and Thomas, 2000, p. 12). For Brierre De Boismont, Secretary of the Société Médico-Psychologique, too, hallucinations are in themselves not a sign of madness, at least not any more than thinking and remembering are. He implied that hallucinations were ordinary mental functions, which can indicate impairment of reason, like any other. "There is only an error if we say that we *should not* have experiences without external objects – we should not have an overly vivid imagination!" (Leudar and Thomas, 2000, p. 12). We might wonder if the error of ignoring such states of consciousness lies at the core of why they can be so nightmarish, why people suffer so much terror.

How the nightmare begins might be better understood if we look at the conceptual division between a first and second order reality. Watzlawick uses the often-quoted example of gold to explain the difference. Gold has certain physical properties that everyone agrees on.[2] This is called the first order reality. The second order reality contains qualities, such as the value, which have nothing to do with the physical properties of the metal, but are attributed to it by human beings. When we feel that our ideas of the second order fit in with the ideas of the first order, we are reassured and can cope fairly with adversities. However, if these two worlds collide, when our constructions no longer "fit", we fall in to despair, we develop fear, psychosis, or thoughts of suicide (Watzlawick, 1990, pp. 135–137). Thus, it becomes important to think about how to stop making this error of judging realities and focus on ways of making sure that we have ideas that allow us to make the two orders fit together.

FIG. 1: *This image was taken in Second Life at the Virtual Hallucinations, a project from UC Davis and Queensland University*

HALLUCINATIONS AND COMPUTER SIMULATIONS

The second conceptualization of reality that might be useful might be the idea that we are living in a computer simulation. In his infamous 1973 lecture "On Constructing a Reality", Heinz von Foerster paraphrases "cognition" as computing a reality or computing descriptions of a reality unto cognition being computations of computations, in an ongoing cycle. He does this by using experiments as an example "in which we see or hear what is not 'there', or in which we do not see or hear what is 'there' unless coordination of sensation and movement allows us to 'grasp' what appears to be there." These experiments imply the notion of other realities existing alongside with the "one only reality" that we seem to presuppose. Suggesting that everything, from his wristwatch to the galaxies, is merely computed, and is not "there" (Watzlawick ed, 1984, pp. 45–47).

The idea of living in a computer simulation is interesting as a tool for understanding hallucinations, especially when we look at existing simulated worlds such as Second Life. It is easy to imagine that the other could hear voices that you do not hear, just because their Avatar is running different software. It means that you might not judge their experience as non-existent or diminished. This brings a whole new light to Julian Jaynes' concept of the bicameral mind in which he believes that before the second millennium BC, everyone was schizophrenic, everyone heard voices that were giving commands. Within this context, it might be interesting to take a look at descriptions of voice hearers:

> *"If you start hearing voices, you realise that they have always been there. It's a matter of the right wavelength."*[3] *(van den Bosch, 1993, p. 36)*

> *"[…] I hear the voices only if I attend to them, but hear them I do […]" (Jaynes, 2000 [1976], p. 412)*

Oxford Professor Nick Bostrom's 2003 paper "Are you Living in a Computer Simulation" is based on the idea that civilizations of the future have enough computing power and programming skills to create what he calls "ancestor simulations". Such a simulation would be a very realistic virtual reality world, in which the brains inhabiting it are themselves part of the simulation. The interesting thing about Bostrom's paper is that in the end he concludes that there is a high probability that we are already living in such a computer simulation. Philosopher David Chalmers even goes as far as to estimate the chances being 20 %.[4] If we are living in a computer simulation, perhaps it is a quantum computer?

HALLUCINATIONS AND THE UNIVERSE AS A QUANTUM COMPUTER

MIT's inventor of the quantum computer Seth Lloyd has recently introduced the concept of our reality being a quantum computer. In his book *Programming the Universe* (2006), he suggests that the universe is a huge ongoing quantum computation, which computes itself and its own behaviour.

Ideas that support this theory are also developed by the neuroscientist and head of the Blue Brain Supercomputer Brain Simulation Project, Henry Markram. In his recent 2010 TED-talk, Markram speculates on the basis of his research results that the universe might have evolved the brain in order to see itself.[5] We might wonder then what the role of the brain is in a quantum computer. Could its role be to create things such as time constructions? In his 2009 TEDx talk in Amsterdam, Astronaut, engineer and physicist Wubbo Ockels, explains how

> *"[…] 'time' is created by human beings, as a way our brains can make sense of gravity. The speed of light is constant, because it is made by us: its the clock by which we have calibrated our existence. Based on this premise, Ockels proposes a new way to explore life in our galaxy."* [6]

Wubbo's proposal is to let go of our chronocentric thinking; the speed of light is our own construct. In a sense, time seems to be the very material that allows us to have experiences in a physical world.

This is my "big idea", then: What if madness, which resides in all of us, is the ability to step outside of our constructed realities, just as we do in our dreams? That is, how about considering madness as our time travelling or time shifting abilities to manipulate the substance of the quantum computer in a more extreme sense, and to rebuild realities, the goal of life to play? What if this is an ability we have always had, yet have somehow forgotten about, as radical constructivism suggests is possible? This would probably include a whole new take on Einstein's statement that reality is an illusion, albeit a very persistent one. Madness would be the mindspace we enter to question this very persistency. The laws of nature would be the rules of the game we created. But how to break free from them? What wonderful things could we do if we could break through our construct of the speed of light, just as Ockels suggests?

We might wonder if that is why madness is so often linked to creativity and genius. In psychosis the thought is everything. Whatever thoughts you have, it has the danger of being experienced as real reality. But how to shift an individual's constructed reality to a shared constructed reality? As Heinz von Foerster states in 1973: reality = community (Watzlawick, 1984, p. 60). Thinking about our experienced reality as a quantum computer simulation on make alterations in, means we would need to take constructed realities of others seriously by not ignoring or trying to suppress them just because we do not see them, as we simply cannot be sure that there are no external objects that are causing them. We would be trying to suppress the very nature of our human ability to construct realities. In a quantum computer everything would be true and not true at the

same time, depending on the perception of the observer. As Louis Sass describes:

> *"Rather than mistaking the imaginary for the real, they [the psychotics] often seem to live in two parallel but separate worlds; consensual reality and the realm of their hallucinations and delusions." (Sass, 1995, p. 21)*

Let's take a look at how the space of madness is described from within, then. Suddenly the grandeur of the power often described as felt during psychosis could be considered in a rather different way:

> *"I felt that I had power to determine the weather, which responded to my inner moods, and even to control the movement of the sun in relation to other astronomical bodies" (Fuller Torrey, 2006, p. 29)*

Should we keep ignoring such claims as an over vivid imagination? Mr Nil, who has experience with psychosis, says that the psychotic enters realities that no one else can enter – realities, in which past, present and future cannot be distinguished from each other. He describes that the suffering that goes along with madness comes from the inability to communicate ones inner experience (Bock, 2000, pp. 183–186).

CONCLUSION

In the end, it does not matter if what I am suggesting is true or not, if it can be proved or not, or if you believe it or not. What does matter is that it provides a new way of thinking about madness as a space that we can all fall into. It is important to think about tools that allow us to explore this space, and to navigate through it in a way that makes us feel that we 'fit', so that we do not succumb to fear and suffering. We fear and suffer from what we do not understand. In essence what I am arguing for is an awareness that our concept of madness is intricately related to our concepts of reality, and that in order to break through the stigma of madness, we need to break through our conventional conceptions of reality. As Jim Al-Khalili, professor of nuclear physics at Surrey University, explains in a BBC4 documentary on the nature of reality:

> *"The world we think we know, the solid reassuring world of our senses, turns out to be just a tiny sliver of an infinitely weirder, more wonderful universe that we could have ever conceived of in our wildest fantasies. Our reality is just an illusion!"*[7]

In such a world, is the concept of a hallucination as a symptom of mental illness not a self-fulfilling prophecy of suffering as an error of not being allowed to exist? If so, does the concept of the hallucination has the right to exist?

NOTES

1) The knowledge I have built about auditory hallucinations has come from numerous sources, Interviews, Blogs, Autobiographies. A good summary about hearing voices may be found on http://www.intervoiceonline.org.
2) Explain how he refers to the fact that the metal itself, and its atomic structure are just as much imagined…
3) Free translation
4) http://www.simulation-argument.com/faq.html question nr 2, last viewed 11 Aug 2010
5) 14.15 min http://www.ted.com/talks/henry_markram_supercomputing_the_brain_s_secrets.html last viewed 11 Aug 2010
6) http://www.tedxamsterdam.com/2009/video-wubbo-ockels-on-time-and-gravity/ last viewed 11 Aug 2010
7) 00.24 min http://www.youtube.com/watch?v=n70BceXaLWo&feature=related, viewed 10 May 2010

BIBLIOGRAPHY:

BENTALL, R P, 2004, Madness Explained Psychosis and Human Nature, Penguin Books London (originally printed in 2003 by Allan Lane)

BOCK, T, 2001, Psychosen zonder Psychiatrie, Inzichten en Levensperspectieven van Mensen met een Gedeeltelijk of Geheel Onbehandelde Psychose, Candide/Wrede Veldt, Amsterdam, first printed in 2000, original title Lichtjahre, Psychosen ohne Psychiatrie, Krankheitsverständnis und Lebensentwurfe von Menschen mit unbehandelten Psychosen, 2000, Psychiatrie-verlag, Bonn

BOSTROM, N, 2003, "ARE YOU LIVING IN A COMPUTER SIMULATION?" Philosophical Quarterly (2003) Vol. 53, No. 211, pp. 243-255. (First version: 2001)

DAKIN, S, et al, 2005, "Weak suppression of visual context in Chronic schizophrenia", Current Biology Vol 15 No 20

DIMA, D, et al, 2009, "Understanding why patients with schizophrenia do not perceive the hollow-mask illusion using dynamic causal modeling", NeuroImage 46 (2009) pp. 1180–1186, Elsevier

JAYES, J, 2000, The Origin of Consciousness in the Break Down of the Bicameral Mind, First Mariner Books, Boston New York, (First published in 1976)

LEUDAR, I, THOMAS, P, 2009 (digital reprint), Voices of Reason, Voices of Insanity, Studies of Verbal Hallucinations, Routledge Taylor and Francis Group London New York, First published in 2000 by Routledge

LLOYD, S, 2006, Programming the Universe, A Quantum Computer Scientist Takes on the Cosmos, Alfred A. Knopf, New York

SASS, A L, 1995, The Paradoxes of Delusion, Cornell University Press (first published in 1994)

VAN DEN BOSCH, R, 1993, Schizofrenie, Subjectieve Ervaringen & Cognitief Onderzoek, Bohn Stafleu van Loghum, Zaventum

WATZLAWICK, P, 1990, "Reality Adaptation or Adapted 'Reality'", Münchausen's Pigtail, W.W. Norton & Company, Inc, New York London

WATZLAWICK, P, 1984, ed, The Invented Reality, How Do We Know What We Believe We Know? (Contributions to Constructivism), W.W. Norton & Company, Inc, New York London first published in 1981

Glauce Rocha de Oliveira

MODERN LANGUAGES DEPARTMENT, FACULDADE DE FILOSOFIA, LETRAS E CIÊNCIAS HUMANAS
UNIVERSITY OF SÃO PAULO, BRAZIL
glaurocha@hotmail.com

ON THE BLUE OF THE SEA: *Real Virtualities and Virtual Realities* [1]

SITUATING THE READER

This article sums up the core of my research on visuality (Rocha de Oliveira, 2002 and 2008), taken here as a complex meaning making process not only localized in (or restricted to) someone's eyes.

In the first account, visuality was understood as a socio-historic interpretative process, subject to its interpreters' social practices, contrary to its Western canonical approach as self-explanatory, or as a possibility to directly access a reality which stands out there, independent of its observers.

In the second account, to critically approach virtuality, I departed from the concept of visuality as interpretation, mainly because it challenged the certainty of a referential reality. Curiously, from this perspective virtuality was as historically constructed as the so-called real reality; therefore the distinction between reality and virtuality ended up being merely "conventional", and visuality (Rocha de Oliveira, 2008) became the soft spot where meaning is created.

The emergence of Visual Culture (Mirzoeff, 1999) and IT-based societies have taught us, for example, that the world order is not only restricted to the cause-effect & chronological rational relation; and that knowledge can no longer be restricted to fixed pieces of information labeled as more trustworthy or objective than other pieces, in order to be used for the sake of power. Moreover, we have experienced a reality in which simultaneity of different spaces and times comprise everyday life, exposing us to a complex set of information which does not work outside its contexts of use.

Thus, the walls which separated subjects and objects in Western ontology have tumbled down or subjects have merged into the walls to transpose them. Either way we are now exposed to an ontological turning point. Therefore, we are able to overcome the closure of material thought in search of a wiser consciousness (Goswami, 2005), in order to transform the interconnected web of senses that we call reality.

1. WYSIWYG: THE ILLUSION OF A REFERENTIAL REALITY

> *"A picture in whatever medium is a symbolic event and therefore a created social artifact". (Worth, 1978, p. 9)*

What You See Is What You Get (WYSIWYG) or **FIG. 1** [2] translates (reflects) Western Culture ontology based on the certainty of a referential reality, i.e. a reality constituted by invariable and fixed referents (models) which preexist the observers and their culture, and therefore which can be accessed, obtained and/or proved (to be true/real) by objective means, methods or instruments.

By taking this for granted, we forget that we first (have to) believe in order to see, or that we see in accordance with our social *schematas* (Gombrich, 1986) or dialogic nature of social knowledge (Bakhtin, 1992). Moreover, we forget that this reliance on the transparency of vision is itself a socio-historically constructed model, which emerges from materialism/ positivism/rationalism, and is grounded on the Western ontological concept that the subject is separated from the object.

Assuming these models are true or real, it is no wonder that Western ontology conceives reality as a measurable fact restricted to a material world, governed by the chronological rules of space and time and by the hierarchies of power (Foucault, 1979). Hence, it is no wonder that vision is considered to be a more objective sense, since it mediates the external world into the subjective realm.

Therefore, we still maintain the rational frames to approach the complexity (Lemke, 1999; Dimitrov, 2006; Bateson, 2004) of the reality we now all face. So, the most daunting challenge is not to deny these frames, but to realize that they have historical reasons for being considered "more real". And if we do not review such reasons, we will be caught in the trap of Reason and the illusion that what we see is what we get (that is to say not generated by our own cultures), or that we have the right to be more right than others who do not share the same rights.

Bearing this in mind, from the perspective of Visual Culture (Mirzoeff, 1999) [3] we are able to approach images, for example, as symbolic constructions. Moreover, we are interested in the meaning making process which is involved at the moment of their construction and at the moment of their reception, or in the (non)shared cultural knowledge that the observers have, in order to see them, since it is the degree of this shared knowledge that will make images more/less transparent (Rocha de Oliveira, 2008).

Curiously, the pixelated images challenge the reliance on the exterior reality in another way, by the dissolution of the certainty of the "out there" referent and by its transposition to the pixel zone, which is also, despite the fact differently (?), socio-historically constructed. Therefore, this dis-placement cannot be understood just by framing what is generated in the exterior reality or in the pixel zone. It is, instead, an opportunity to see (reflect on) our frames and challenge them.

In addition to the pixel zone, another challenge to the objective material reality is the augmented space *overlaid with dynamically changing information* we now inhabit (Manovich, 2006, p. 220).

FIG. 1: *WYSIWG, hp ad published in Time magazine, 11 June 2001*

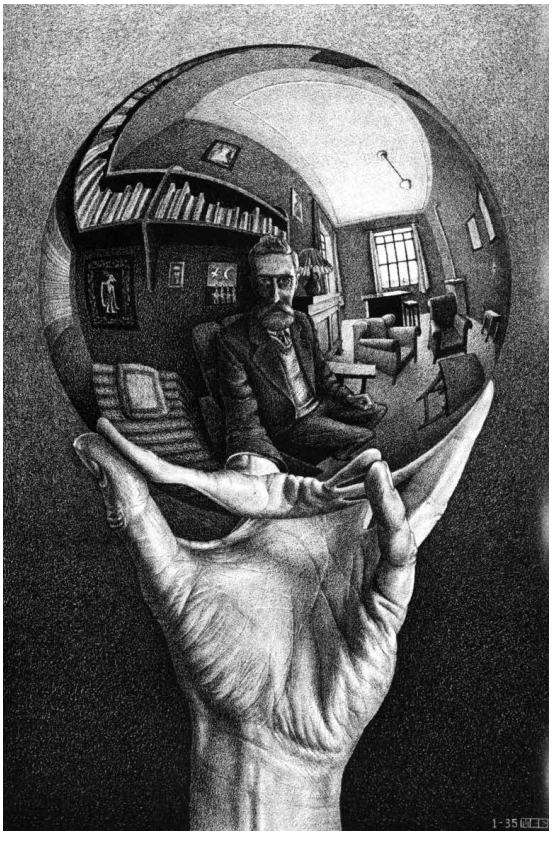


FIG. 2: *WYSIWG, Escher's Holding Sphere*

Even though this augmented space is still framed by the disciplinary forces of the Western disciplinary societies (Foucault, 1979), it is a chance to review not only these forces, but also to expand the frame of a 3D fixed space, which now seems to be a soft spot from which another consciousness may emerge.

The process of reviewing the grounds of reality is not a simple one, but a necessary one in order to get away with the dominant modes of thought that have enclosed us up till now. What do you say to start reflecting on the reflections of reality?

2. ON THE BLUE OF THE SEA: REAL VIRTUALITY

> *"[…] Virtual worlds are about the dissolution not of reality, but the assumptions that go into subject/object relations." (Burnett, 2005, p. 58)*

> *"Virtuality is not an innocent place. On the other hand, there is now increasingly little difference between what used to be distinguished as the real and virtual. The complex terrain of the interaction between the global and the local that is the site of contemporary cultural practice is both real and virtual at once […]." (Mirzoeff 1999, pp. 91–2)*

Escher's Holding Sphere [4] **(FIG. 2)** illustrates that we are dealing with reflections which interact within certain conditions. In line with this illustration, the blue of the sea is also the reflection of its surroundings, instead of the assurance that the sea is really blue. How to negotiate meaning within complexity (Dimitrov, 2006; Lemke, 1999)? And above all, how can we change our perception?

In fact, the blue of the sea is a metaphor to re-signify the act of seeing. Not localized in the eyes, seeing becomes a complex interconnectedness of our six senses (Rocha de Oliveira, 2008) – taste, smell, sight, touch, hearing, and consciousness – throughout our bodies across the multidimensional spaces we live in.

We are now guided by the order of simultaneity and affinities within the complex terrain of different regimes of truth. Meaning is not fixed, but shared (or not). It is constructed according to contexts.

By realizing that meaning is linked to regimes of truth, we can no longer firmly state or guarantee that regime A or regime B is the only source of or access to reality. By perceiving where these regimes are grounded, the only certainty we have is a momentaneous guarantee to share the same wavelength of our interlocutors. In this sense, we realize there is no preexistent model of a real reality, nor are there different realities coexisting. What we first face are the restrains of our culture, as Veyne (1988, pp. 127–128) explains:

> *"[…] culture, without being false, is not true, either. I have gone to Descarte for that he who wrote in letters to his friends, not daring to put it in print, that God had created not only things but also truths, so that two and two would not make four if He had so wished it. For God did not create what was already true; the only things that were true were what He had created as true, and the true and the false existed only after He had created them. It is enough to give this divine constitutive power, this power to create without the need for a preexisting model, to man's constitutive imagination."*

The augmented space (Manovich, 2006, p. 223) we inhabit, virtual communities, along with the emergence of IT-based societies, challenge the ontological order of Western societies and teach us that the juxtaposition of our senses influences the meaning making process:

> *"Augmented space is the physical space which is 'data dense', as every point now potentially contains various information which is being delivered to it from elsewhere. (…). Thus we can say that various augmentation and monitoring technologies add new dimensions to a 3-D physical space, making it multidimensional. As a result, the physical space now contains many more dimensions than before, and while from the phenomenological perspective of human subject, the 'old' geometric dimensions may still have the priority, from the perspective of technology and its social, political, and economic uses, they are no longer more important than any other dimension."*

This learning process demands from us a shifting or the necessity to let our dearest certainties go. By changing our *schematas*, we change our perception, and vice-versa.

2.1 SENESTESIA: EMERGENCE OF A WISER CONSCIOUSNESS

The current era is demanding an ontological shift, in which the Western separation between subject and object, generated by the certainty of a preexisting reality, needs to be reviewed in order to address our own sensorial multiplicity and one of the world's most challenging needs, that of re-integrating all of our senses, which will make us see beyond the fixed regimes of truths that entrap us.

Different from the concept of acquiring and/or accumulating knowledge, *senestesia* (Rocha de Oliveira, 2008) teaches us that we need to suspend what we already know in order to let a wiser perspective emerge.

Senestesia (cenesthesia + synesthesia + kinesthesia + aesthesia) is the complex relationship between our six senses. Its written form in Portuguese deviates from the orthographic rules as a way to make the reader aware of the junction of the three Greek prefixes used to create and re-signify this word: *syn- (together, at the same time); cen- (common); kine- (to move)* plus the aesthesia, as the "ability to feel or perceive sensations" [5].

Thus, *senestesia* implies that the process of creating meaning is not only grounded on stable certainties derived from the Western regimes of truth. Moreover, *senestesia* can be a way to understand the dissolution of conventional boundaries. In other words, it is a reintegrated act of seeing, that even though limited by our own perspectives we feel the interconnectedness of everyday life. Therefore, we are able to {re}act in a way which expands the possibilities of human interaction (Goswami, 2005).

In addition, it provides the possibility of passing through the canonical regimes of truth without being stuck to them. In this sense, *senestesia* is a sensorial ability we all have under the human condition that allows us to overcome the boundaries which separate us from ourselves and the contexts of production.

Even though we are framed, and in a way we still need those frames to produce meaning, we can no longer be enclosed by an everlasting regime of truth if we want to {trans}form reality. We now have the opportunity to shift the wavelength of our perception. What is there to believe if seeing is no longer believing?

3. REALITY: THE GENERATIVE WOMB

> *"What is the pattern which connects all the living creatures?" (Bateson, 2004)*

To answer the question in the previous section implies that we assume responsibility for our own attitudes or that we believe in the unbelievable (in the sense of the not previously known), by suspending the Western certainties that enclose us.

In doing so, we face a void (or grid to be filled out?), through which we can create or change reality by dealing with the aforementioned *senestesia*. In this void, every single sense makes sense, or plays its role, as Bateson (2004, p. 6) puts it:

> *"We have been trained to think of patterns, with the exception of those of music, as fixed affairs. It is easier and lazier that way but, of course, all nonsense. In truth, the right way to begin to think about the pattern which connects is to think of it as primarily (whatever that means) a dance of interacting parts and only secondarily pegged down by various sorts of physical limits and by those limits which organisms characteristically impose."*

And by paying attention to this *dance of interacting parts* we can hold the sphere without holding one single real position/frame. Thus, we can reflect on the reflection that we see through *senestesia*, leveraged by the affinities or wavelengths we are tuned to (Veyne, 1988).

In the aforementioned *dance*, we discover that every single part, in addition to interacting, together creates a moving whole, in constant transformation. In fact, we do not know it before hand, which is to say that the pattern is previously unknown to us.

In this sense, we do not need to (believe) focus, for example, on the flow of information we are exposed to (since the pieces of information alone do not have inherent values, i.e. neither knowledge nor wisdom), nor should we (believe) focus on the technologies as products our culture has created thus far with the boast that they are the most modern of all technologies. However, we do have to pay attention to the frames we use to create meaning based on these things or that we use to attribute meaning to them. Moreover, close attention must be paid to how we manipulate and construct such meaning within this void (and that is very demanding). Or will we just continue to apply frames that no longer fit?

SOME (FINAL) REFLECTIONS

Far from being a fixed, preexistent and neutral set of values and models, grounded on enlightenment and materialism, reality is a socio-historic construction, which reflects not only the regimes of truths, but also our perception wavelengths.

However, if we assume reality is a construction, instead of finding the answer, we will be faced with an intriguing dilemma: How free are we from the frames we take for granted? How wise have we become in the quest to feel/approach a unique multidimensional reality? How is the wavelength of our consciousness (not)fitting into the *dance of interacting parts*?

NOTES

1) This article is named after my PhD thesis On the Blue of the Sea: Real Virtualities and Virtual Realities, University of São Paulo, Brazil, June 2008.

2) Ad published in Time magazine, June 2001.

3) "Visual Culture is concerned with visual events in which information, meaning, or pleasure is sought by the consumer in an interface with visual technology." (Mirzoeff, 1999, p. 3)

4) Holding Sphere, in ERNST, B., 1991. O Espelho Mágico de M.C.Escher. Singapore: Evergreen.

6) http://www.thefreedictionary.com/aesthesia

REFERENCES

BAKHTIN, M., 1992. Marxismo e Filosofia da Linguagem. Translated by Michel Lahud e Yara F. Vieira, 6. ed., São Paulo: Hucitec.

BATESON, G., 1980. Mind and Nature: A Necessary Unit. Available at: http://www.oikos.org/mind&nature.htm. [accessed November 8 2004].

BURNETT, R., 2005. How Images Think. Cambridge, Massachusetts: MIT.

DIMITROV, V., 2006. Discovering Fuzziology. Available at: http://www.zulenet.com/vladimirdimitrov/pages/discovering-fuzziology.html. [accessed June 2006].

FOUCAULT, M., 1979. Microfísica do Poder. Translated by Roberto Machado. 9. ed. Rio de Janeiro: Graal.

GOMBRICH, E., 1986. Verdade e Estereótipo. In E. Gombrich. Arte e Ilusão. São Paulo: Martins Fontes, pp. 54–79.

GOSWAMI, A., 2005. A Física da Alma. Translated by Marcello Borges. São Paulo: Aleph.

LEMKE, J., 1999. Opening Up Closure: Semiotics Across Scales. Available at http://www-personal.umich.edu/~jaylemke/papers/gent.htm [accessed March 8 2007].

MANOVICH, L., 2006. The poetics of augmented space. Visual Communication – special issue: Screens and the social landscape, 5 (2), pp. 219–240.

MIRZOEFF, N., 1999. An Introduction to Visual Culture. London: Routledge.

MIRZOEFF, N. ed., 1998. The Visual Culture Reader. London: Routledge.

ROCHA DE OLIVEIRA, G. 2002. Ver para Crer: A Imagem como Construção.

MA. University of São Paulo (FFLCH). Available at: http://www.teses.usp.br/teses/disponiveis/8/8147/tde-02012006-105801/

ROCHA DE OLIVEIRA, G. 2008. Sobre o Azul do Mar: Virtualidades Reais e Realidades Virtuais. PhD University of São Paulo (FFLCH). Available at: http://www.teses.usp.br/teses/disponiveis/8/8147/tde-30072008-115653/

VEYNE, P. , 1988. Did the Greeks Believe in their Myths? An Essay on the Constitutive Imagination. Translated by Paula Wissing. USA: The University of Chicago Press.

WORTH, S., 1978. Man is not a bird. In Semiotica, 23:1/2. Available at <http://www.temple.edu/anthro/worth/sbird.html>. [accessed May 14 2001]

Mary Oliver

READER IN DIGITAL PERFORMANCE
UNIVERSITY OF SALFORD, UK
m.oliver@salford.ac.uk
www.maryoliver.net

TALK TO ME!

"Talk to me" is the latest development in a decade of practice of creating performances involving the presentation of impossible performance relationships; such as a series of work in which actually present performers, perform with on screen cast members. More recently these works have included the introduction of animated performers in order to test whether it was possible to create the appearance of a convincing live relationship between a real and an animated performer.

For some while now I've become dissatisfied with this false, as Steve Dixon calls it, largely "Re-active" or "Symbolic"[1] interactive method of performing with screen based actors, and have been slowly moving towards the development of more spontaneous methods of delivery. In collaboration with the Banff New Media Institute, I developed "The Screaming Head" (2009) a movement responsive grotesque head that abuses the inter-actor. A motion sensor, in this case, the Nintendo Wii, triggered multiple abusive responses dependent on the quality of interaction. A bank of responses was pre-recorded and stored, once again giving the "appearance" of spontaneity. This was followed by a motion responsive video work [2] that required the audience to swing a suspended screen in order to trigger a random selection of moving images that formed a non-linear narrative. Developments in the digital interface have been combined with audience centred works [3] and although seemingly very different, each of these performance interfaces, confirmed that above all I was working towards a greater understanding and expertise in developing and controlling interactions; whether they be human-to-human, human-to-on-screen performer, human-to-animation or human-to-machine.

I have been engaged in several questions:

– Why, when I am performing with myself, do I not recognize the other as me i.e. it's not like looking at a photo of oneself, but a real other performer?
– If it is so easy to convince my brain that this other me is another real performer, surely it is possible to convince anyone that a meaningful dialogue can be achieved with an equally real but virtual presence and if this is the case, why aren't we doing more of it, what's preventing this from happening?
– As performance makers do we need to impact on the development of the technology in order to get the ease and style of communication that we would ideally like as performers?
– Why doesn't my computer talk to me?

Empathy is the key word that ties all of these together; already standard in the development of good screen writing and a necessary element in successful audience to performer experience, it has become a more recent focus in computer science and recently of paramount importance to neuroscientific research and our growing understanding of the function of mirror neurons. A successful empathetic interaction in HCI terms; to firstly acknowledge the presence of the users and secondly to recognise them, is a bottom line description of empathy between people.

Stanford based Clifford Nass in his Computers as Social Actors (CASA) research programme has confirmed that people who use computers:

– Anthropomorphise the systems that they use and that this response is more or less automatically activated.
– Think that gender is an important factor in the delivery of computer based support systems.
– Like their computers more if they are flattered by them. [4]

The research that he has undertaken over the last 15 years has not only showed that people prefer computer interactions where flattery is a major component in the language of the system but that one could take any model of good communication and it would work equally well such as consultation, giving feedback, asking questions.[5] I am considering ways in which the HCI could give me a more satisfying and essentially performative interactive experience.

As a woman involved in working with media technologies I am acutely aware of the lack of women designers and programmers. As a customer I am aware that very few of the products on the market appeal to me. As an inter-actor I am dissatisfied with the one-sided relationship I have with my computer when I know it can do so muchmore and that I am capable of telling the computer so much more than through just using the qwerty keyboard.

Technologies designed primarily for research in bioscience have to this point not been applied to developments in the generic computer interface; there are obvious reasons of cost and the expertise needed to interpret the data. However looking at how developments in the HCI have been driven we find a different story, one that tells of little interest in feminised human-to-human communication and is largely dominated by the limitations of the technology itself which have in turn been designed without such consideration. Literally technology led; we have reached a position where computer manufacturers are only just coming round to the idea that computers would sell better if they communicated better with a broader demographic.

Taking this challenge on as an essentially performance led project, with possible other applications, I am now working towards the development of new two-way communication systems that allow the computer to interface directly and spontaneously with the inter-actor by talking directly to her in response to her current physical state. I am not alone in exploring such capabilities but what I am hoping sets this programme apart from other experiments

in interactive HCI developments is that it is led by a theatre maker; someone experienced in making the imaginary appear real through the development of good character design, working in collaboration with cognitive-psychologist Dr. Adam Galpin, an expert in the psychology of human behaviour, Rob Bendall, bio-sign technician and Joe Brindle, computer programmer, this project will primarily explore the importance of characterful spoken narrative in the construction of real and affective empathetic interactions and points to the potential of this development for wider applications in health, well-being and entertainment.

Developments in interactive gaming, notably the Nintendo Wii and Mii allow the player to receive direct responses from the computer programme in a seemingly two way dialogue, but this interaction functions using limited user-data and a narrow interpretation of gender preferences in its choice of applications. Where the user is permitted to interpret and "own" the interface we see a much more interesting and often perverse set of choices. In Second Life the wide-ranging approach to the construction of avatars suggests that as individuals we enjoy challenging the norms of identity as online users re-gender, recreate and redesign themselves, but SL is still a relatively unrequited relationship.

The dissatisfaction that I'm feeling isn't unusual, in her now seminal old publication "Computers as Theatre" (1991) Brenda Laurel called for more considered product design that would appeal to a broader demographic, utilize more intelligent navigation systems. Twenty years later and her ongoing efforts to "humanise" the computer interface, led to the research and development of games for girls which she claims, embraced the knowledge that girls have a love of social complexity and enjoy the narrative of social behaviour. This is still barely acknowledged in the interactive media industry.

There are still too many examples of the triumph of style over substance in new media products and for the most part I think that we can ascribe these to:

– The over-use of largely conflict based narratives
– Over-complex navigational tools
– Poor use of empathy
– Poor use of language patterns
– Poor levels of recognition of the user

I know I'm not alone in wanting my computer to do more, I want to have conversations with it; to recognise me; I want my computer to talk to me.

The intention of "Talk to me" is to explore the use of scriptwriting in conjunction with the technological interface in order to try to achieve a point where:

– The audience or inter-actor can bring their own personality, creativity and empathy to the relationship.
– recognition of the user is offered through both a reactive and predictive methods.

This new project aims to bring the experience that I have had with using the casual nature of the conversational script as a device to transcend the divide between the real and the virtual, in effect I am trying to feminise the interface.

To feminise the interface does not mean to simply ascribe a female voice to a computerized system but to give it "traditionally" feminine qualities, such as attributes of caring, nurturing, enjoying complex sociable relationships, having good (often long) conversations. With this aim in mind, along with Adam Galpin, I held a workshop with Media Psychology undergrads to ask them if they had the choice what would they like their computer to do for them. This group was 75 % female.

– Tell me how to get a first
– Give me a massage
– Read my mind
– Tell me when I've stopped working at my best
– Tell me how my biology is affecting my performance i.e. dehydration, high blood pressure, heart rate
– Talk to me
– Don't just beep when I've done something wrong tell me what I've done

I have begun to explore the bio-sign technology available to see whether any existing equipment could be used to develop a performative interface without re-programming the devices but simply changing the use and application. In order to create not just an illusion but a physical bond between inter-actor and computer performer I am constructing a series of bio-sensor based interactions. The first uses galvanic sweat palm reading equipment to literally read the palm of the inter-actor and reveal as if by magic how they are feeling. The second work will bring the inter-actor into direct contact with the computer interface and the actor within the machine who will respond through an expansive library of reactions to their physical state.

The aim of the bio-sign reading HCI is to create a physical bond between the inter-actor and the computer and it will act as the device through which I will deliver a series of acts of empathy, talking and kindness. This physical rather than purely intellectual bond between the two will allow a more personalised and intimate relationship allowing the computer to respond with quite specific information and actions. This work proposes that it is not just the psychology of empathy that is important in the development of new interactive processes but the enduring importance of human-to-human communication whether they be real or just in the mind of the inter-actor.

I will be empirically testing what we as actors and good communicators already know:

– The importance of imitation in signalling that we like someone and whether this action is an extension of mirror neuron activity
– The importance of empathetic actions (envelope – nods and shakes, head tilts) involved in a good conversation
– The importance of suggestive language (i.e. the magic in the script)
– The importance of playfulness in order to de-limit the process from purely exploring commercial or therapeutic results but the as yet unknown
– The Importance of human-to-human rather than human to animation communication
– Importance of physical liveness in the creation of a genuine bond between the computer and the inter-actor

These performances for the present use Mary Oliver human computer in direct contact with the audience member through our hands. My role is to guide the conversation to try to activate physical responses from the participant that will

be revealed in various ways. The first will use the simple grid mechanism that is already part of the software, the more the participant gets aroused the higher in pitch the sound levels go. Through various questions, confessions and acts of love and kindness, the work will focus on the audience member and give them direct feedback about how they are feeling – (i.e. reading their mind) or as the student in the workshop said, to tell them what they're thinking.

The use of bio-sign data in performance is the start of a new branch of audience centred performance work that connects them to the performance itself. There are of course ethical issues that need to be overcome in that the collection of bio-sign data, even temporarily needs to have ethical approval and a rigorously composed and signed contract between performer and inter-actor. This hurdle has yet to be jumped but I'll keep you informed.

The information gathered and generation of scripted material produced by "Talk to me", will then be transferred to the machine supported by pre-existing studies that have already been carried out by scientists indicating that visual face to face communication, even with virtual actors, arouses more successful reactions than with purely language centred, text and audio, feedback. Which brings me back to my starting point and to what I already know from the performances that I've made.

This HCI performance between audience participant and digital actor signals a new step in the relationship of audience to virtual actor. It reinforces that performativity is part of everyday life and that as performance makers our relationship with technology is not something that we should be passive recipients of. As experts in human to human communication we should be at the forefront of new human to technology relationship systems and as educators we need to embrace a broader interdisciplinary spectrum of expertise in our performing arts courses, to include computer programming, behavioural science and magic.

NOTES

1) Dixon, S., (2007), Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation Chpt 23, p 561. MIT Press.

2) Oliver, M. and Klassen L., (2010) Interactive Video, part of Offit, Installation at HubM3, Salford. Artist in residence programme in collaboration with Canadian artist, Lois Klassen.

3) Oliver, M., (2009) Babble, created as part of Rules and Regs Live Art Residency 2009, Bracknell Gallery, curated by Outi Remes.

4) Summarised in Lee, EJ., (2009) What Triggers Social Responses to Flattering Computers? Experimental Tests of Anthropomorphism and Mindlessness Explanations P 194, Communication Research 37(2)

5) Nass, C., Yen, C., (2010), The man who lied to his laptop: What Machines Teach Us About Human Relationships. Penguin.

Pam Payne

BRICKHAUS, BROOKLYN, NEW YORK, USA
pam@brickhaus.com
www.pampayne.com
www.brickhaus.com

THE INVOCATION OF OUR POLYRHYTHMIC REALITY

This paper explores the idea that our human experience and varied states of consciousness are encoded, communicated and realized as sequential rhythmic patterns in time.

Siberian Shamans believe their "real" self is the dream-self experienced in an "altered" state. MTV's Real World is a contrived drama produced for television audiences. All of our realities, frivolous and profound, are created by consensus. Reality, as well as our thought processes, emotional tides, and our states of consciousness are the result of successfully shifting concentration from one specialized pattern and aligning it to another pattern so that an alternate experience is achieved. Throughout history we have used all sorts of exercises, formulas, spells, prayers and rituals to induce particular altered or heightened states of consciousness including the athlete's "zone", a musician's peak-performance trance state, a Balinese dancer's channeling of deities, or an ecstatic religious experience. Our biology, chemistry, electricity, magnetism, and additional energies and substances that we are not yet aware of, compose a dynamic baseline that we experience as our individual selves. This intrinsic range of patterns is influenced by other individual and environmental patterns. When we experience a synchronized shift in our focus together as a group the effect is amplified and generates a phenomenon greater than the sum of its parts, perhaps with momentum to feedback and take on a life of its own. The result of such focused concentration might be the ability to conjure rainfall, heal the sick, or at least certainly, to instigate cultural revolution.

We are deeply affected by the rhythm and pace of our environment, as we in turn, influence it. The shift in our environmental pattern was palpable for those of us who witnessed, first the use of answering machines, and then email and cell phones. It must have been a similar pattern shift with the introduction industrialization and of automobiles. We become collectively "caught up" in a wave of shared excitement or a rush of new information. We do not need to be in the same room to fall under the influence of Elvis or more darkly, of Hitler, or to share the experience of Beetle-mania, the moon walk, or tragically, the World Trade Center Disaster. We connect to and share and align to environmental patterns through radio and television and we band together on the Internet, just as we do at our kitchen table, our Pub, our church.

What is really going on when an image or song touches us so profoundly? Or when a political march, religious sermon, sports event or concert incites an extreme level of mass mania? A song is certainly enhanced by the musician's skill, depth of connection to the composition and personal charisma. It is equally enhanced by the physiological effects of the vibrations caused by the combination of the particular notes played as well as by the environmental factors. But I am suggesting there may be additional energies or substances conveyed: core soul-stuff; life source energy-stuff; encoded in an underlying pattern that can be perceived only as a process or sequence of rhythmic events experienced in time.

These patterns may be encoded in any experience, including music or prose; in a sequence of images, motions or dance movements. When the potent "life source energy-stuff" is encoded into a pattern of words or notes that punctuate time and I suspect that it is not only the actual defined point (word or note) that carries the transformative "message" or "sensation", but the space between the points. It is the mysterious thing of it that you cannot put your finger on – the fleeting nuance that escapes you; the thing that cannot be nailed down and defined. This elusive non-thing could represent a tension, a binder that connects the string of events together in time. This elusive non-thing combined with defined points in time creates a pattern which potentially can carry and convey a potent connective and transformative human experience.

Ultimately, a profound transformative phenomenon is more successfully experienced than described. For this reason the arts, music, and creative fields in general are more capable of identifying and communicating this phenomenon because of their ability to comfortably convey subtle nuance and ambiguity, contradictions and the undefined rather than those disciplines which require hard evidence and clear definition. A bird's flight leaves no trail. Yet the flight was witnessed. A reflection of the moon in a pool is not "really" the moon, yet its effect equally moving.

There are possibly archetypal patterns that can be identified such as ocean waves, a heartbeat, and thunder and lightning. The more potent the source pattern and authentic the connection to it, the stronger the potential for deep transformative experience when communicated through a patterned experience. Is it possible that something similar to muscle memory occurs when encountering a potent archetypal pattern? Does the encounter enable one to tap into a common memory pool or an ancient experience – perhaps even a pre-human or a sub-particle experience? Simplifying what are potentially extremely complex patterns for the sake of illustration, could the sensation of rocking, spiraling, speeding, floating, falling, spinning, vibrating … be reminiscent of a core life-generating experience?

Taking this thought process further; the closer one's experience aligns to a core life-source pattern, the higher the potential for a transformative effect. Frequently throughout history, this type of experience has been recognized as powerful healing force; as a creative life rejuvenating power, a heightened reality experience; or one of "I feel really

alive now!" And to many, this experience is irresistible. We search it out. It is perhaps the source of addictions. It incites extreme passion that emerges as fear and repression in some, and free expression or peak performance in others; and as psychosis or touched by the divine in yet others. Descriptions vary though history. But consistently, it has been thought that there is some kind of a healing, regenerative, creative or divine force contained or encoded within drum rhythms and songs, images and objects such as relics, and places and environments where remnants of a profound experience have occurred. Art, dance and music have long been methods of tapping this "core life-source".

The Southern Italian Tarantella trance rhythm and dance are used to heal the poisonous bite of the tarantula, a metaphor for ridding those afflicted with a dampened, repressed life spirit. The Gnawa of North Africa perform rhythmic songs as healing rituals. Cuban Yoruba ritualistic drum rhythms are performed to evoke the presence of deities and to induce a meaningful spiritual experience for the participants. Similar examples have existed throughout history and continue to persist all over the world. I wonder if there is an underlying pattern to such ritualistic drumming or dancing. If a pattern were translated into time based visual image patterns would the visuals induce a similar state of consciousness intended with the drums? Is there an underlying pattern – punctuated marks and spaces in time – that carries the encoded sequence for aligning a state of consciousness that will cause a transformative experience?

Traditional artistic practices such as painting or playing an instrument directly communicate emotion through brush strokes, vibrato and breath. Digital instruments are often criticized for their sterile, rigid nature and inability to convey the warmth of human expression. But why expect our digital instruments to mimic existing instruments of an entirely different nature? Digital instruments may be uniquely capable of identifying and communicating alternative, complex and transformative human experiences and states of reality.

REFERENCES

BELLONI, Allessandra, 2007, Rhythm is the Cure, Southern Italian Tambourine Dedicated to the Healing Powers of the Tarantella Rhythm. Montana: Mel Bay Publications.

RADIN, Dean, Hayssen, Gail, Emoto, Masaru, Kizu, Takashige, Sept. 2006, Double Blind Test of the Effects of Distant Intention on Water Crystal Formation. Explore – The Journal of Science and Healing Vol 2 Issue 5 (pp. 408–411)

HIS HOLINESS the DALAI LAMA: How to See Yourself as You Really Are, 2006, New York: Atria Books.

GROB, Charles S. (Edited by), Hallucinogens, a Reader, 2002. New York, Penguin Putnam

VELEZ, Maria Teresa, 2000, Drumming For The Gods, The Life and Times of Felipe Garcia Villamil, Satero, Palero and Abakua. Philadelphia: Temple University Press

SAMAKE, Sibiri, El Belkani, Brahim, Wijdan: The Mystery of Gnawa Trance Music, 2000, DVD Documentary, Directors: Bella Le Nestour, John Allen

TAME, David, 1984, The Secret Power of Music, New York: Destiny

BOOKS

"A dream you dream alone is only a dream. A dream you dream together is reality" – John Lennon, Yoko Ono, www.imaginepeace.com

KANDINSKY, Wassily: Concerning the Spiritual in Art, 1977, New York: Dover Publications.

ELIADE, Mircea, 1970, Shamanism: Archaic Techniques of Ecstasy. New Jersey: Princeton University Press.

JUNG, Carl G., von FRANZ, M.-L., HENDERSON, Joseph L., JACOBI, JOLANDE, JAFFE, ANIELA, 1968. Man and His Symbols. USA: Dell Publishing.

Mike Phillips

DIRECTOR OF i-DAT.
UNIVERSITY OF PLYMOUTH, UK
mike.phillips@plymouth.ac.uk
http://www.i-dat.org

REALLY? THE INCOMPREHENSIBLE TRUTH

WE ARE PSYCHOPATHS

Our collective ability to renegotiate our reality has been enhanced by instrumentation that provides resolutions and scales that "you people wouldn't believe" (Batty, R. 2019). And yet we still find the truth revealed through these instruments incomprehensible. This could well be that our tiny brains can't understand the input, or lack the processing power to deal with it; or it could be that we are just psychopaths. Like all NEXUS 6 replicants we struggle with empathy. Whilst we may prefer the Psychopathy Checklist-Revised (PCL-R) to the Voight-Kampff machine our ability to negotiate reality is seriously undermined by our clumsy sensory instrument and fatally flawed by our collective psychopathy. Some of my best friends are psychopaths; it's a comfortable state to be in. Ideally we would demonstrate normality through a continually renegotiation of our reality based on the evidence provided by our senses. The psychopath is an interesting model of the collective behaviour of "you people", psychopaths are unable to renegotiate their reality, its fixed, the world around them and the input from it is reconstructed to match that reality. Collectively we are in denial, busily making the world fit to our version of it, despite the models, the data and the instrument readings. But then again, maybe the instruments are colluding with us? After all we did build them in our image.

INSTRUMENTALLY, MY DEAR WATSON

> *"'Circumstantial evidence is a very tricky thing,' answered Holmes thoughtfully. 'It may seem to point very straight to one thing, but if you shift your own point of view a little, you may find it pointing in an equally uncompromising manner to something entirely different.'" (Doyle, 1891)*

The author has been involved in the development of a series of projects that question the nature of the "evidence", its reading through instrumentation, the processing of the data and its subsequent manifestation as human experience – a process of renegotiation. i-DAT projects such as S.T.I. (Search for Terrestrial Intelligence) (2002) revealed the processes by which evidence of intelligence is generated through a collaborative process that relies on the collective psyche. The view of our planet from space provides a unique and critical perspective. S.T.I. turned the technologies that have previously been looking into deep space for evidence of Alien Intelligence back on to our space in a search for Terrestrial Intelligence. Scientific and artistic endeavour for truth and knowledge has been dominated by a methodology that is primarily reliant on 'vision'. Increasingly the dominance of the human eye is being challenged by a new generation of technologies that do our seeing for us. These technologies raise critical questions about the nature of the truth and knowledge they elicit, and the way in which we interpret them.

"Constellation Columbia" on the other hand, was a working prototype for an autonomous monument for "Dead Astronauts/Cosmonauts". Designed to reflect our dysfunctionality when placed in alien environments the robot incorporated simple audio/radio recording and transmission, gyroscopes, gravity switches and light sequencers. When entering Zero G "Constellation Columbia" would panic, having lost its only reference to reality, the force of gravity, all of its sensors and stabilisers would be activated in a frenzied attempt to find a new sense of certainty. As an experiment to explore the potential psychosis of autonomous systems "Constellation Columbia" was forced to levels of uncertainty and paranoia that might make its owners question the data retrieved through its frantic signalling.

Both S.T.I. and "Constellation Columbia" asked critical questions about the collective consciousness of the reader and the sanity of the instrument. Like the flawed models of human behaviour gleaned from clinically insane lab rats (Garner, J. P. 2005), we must question the impact infinite space has on the sanity of autonomous sensing technologies such as the Viking explorer. It should not be a surprise when the instruments we create in our image see their reflection on the surface of Mars.

A MOTE IT IS…

FIGURE 1: EXTRACTING A MOTE…

Zooming in, Charles and Ray Eames style to "A Mote it is …", a work by the author for the Art in the Age of Nano Technology, John Curtin Gallery. "A mote it is to trouble the mind's eye."[1] Words spoken by Horatio to describe Hamlet's father's ghost, an entity seen but not believed and one is left to wonder if it is just the seeing of it that makes it real – its existence totally dependent on the desire of the viewer to see it. The "mote" or speck of dust in the eye of the mind of the beholder both creates the illusion and convinces us that what we see is real. Something just out of the corner of our minds eye, those little flecks magnified by our desire to see more clearly. Yet the harder we look the more blurred our vision becomes.

FIGURE 2: A MOTE …, FIGURE 3: AFM IMAGE …

A Mote it is ... is constructed from data captured by an AFM (Atomic Force Microscope) from a "mote" or piece of dust extracted from the artist's eye. The whirlwind of data projected within the gallery is rendered invisible by the gaze of

FIG. 1: *Extracting a mote …*

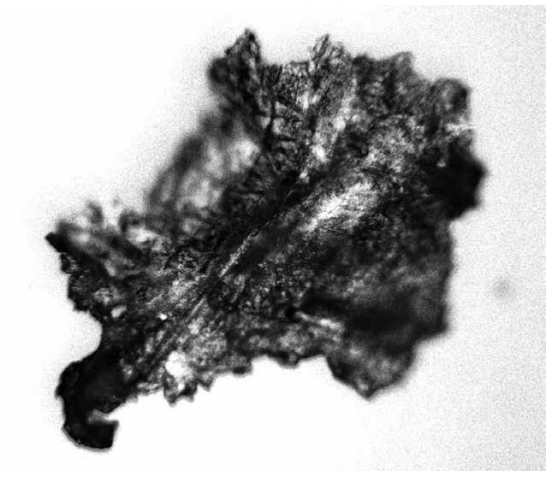


FIG. 2: *A mote …*

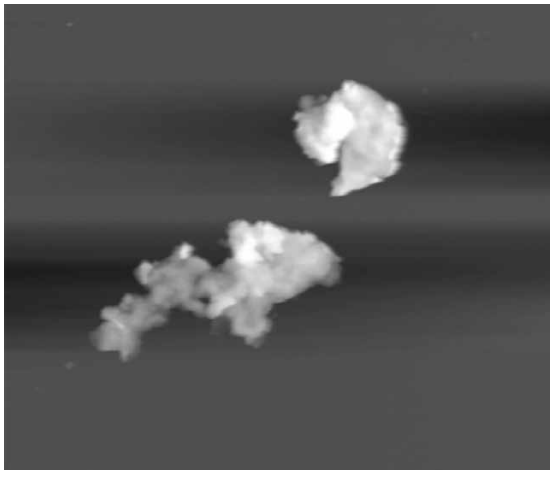


FIG. 3: *AFM Image*

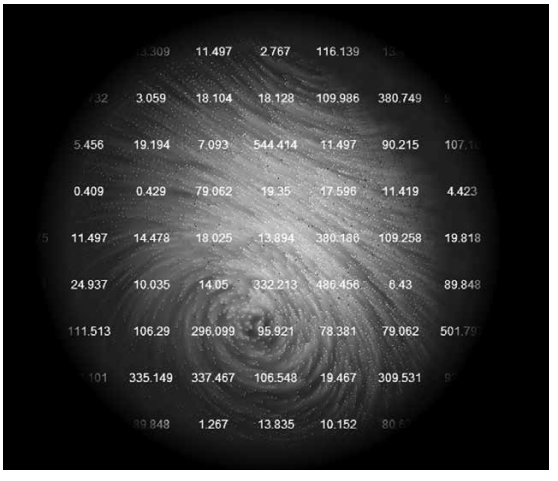


FIG. 4: *Data mote …*

the viewer. The more we look the more invisible it becomes – look away and it re-emerges from the maelstrom of data. A ghost of the mote can be seen in the viewer's peripheral vision but never head on – if you see what I mean?

FIGURE 4: DATA MOTE …

Our Twenty First Century magic instruments mark a dramatic shift from the hegemony of the eye to a reliance on technologies that do our seeing for us - things so big, small or invisible that it takes a leap of faith to believe they are really there. Our view of the "real world" is increasingly understood through images made of data, things that are measured and felt rather than seen. What we know and what we see is not the same thing – if you see what I mean?

ALCHEMICAL TRANSFORMATION

To explore this collective psychopathy this paper will describe and dismantle i-DAT's frameworks (described as Operating Systems below) to dissolve the smoke and mirrors of the technology in order to reveal the alchemical processes that facilitates the formation and transmission of human experience. These frameworks deal with the construction of mixed reality environments that create spaces that are as much the product of the imagination as they are of a technological materiality and enable fluid shifts between states (generally and inadequately referred to as the physical and the virtual). These spaces facilitate shared social experiences, a collective psychopathy, a mutually beneficial illusion; such as the S-OS.org and CO-OS.org or the visualisation of the infinitely small, as in "A Mote it is …". Underpinning the development of these projects is the understanding that the primary fabric for manifesting experience is "data". Data, code, behaviour and experience, a series of transpositions in the dematerialisation of the material world.

These "Operating Systems" dynamically manifest "data" as experience in order to enhance perspectives on a complex world. Arch-OS [www.arch-os.com], an "Operating System" for contemporary architecture ("software for buildings") was the first "OS", developed to manifest the life of a building. An Arch-OS kernel has been recently installed as the i-500 (www.i-500.org) (**FIGURE 5** & **6**) in Perth Western Australia to reflect and manifest the research of a community of nanotechnologists. Arch-OS provides a framework for the inhabitants of a building to understand its complexity from a perspective outside of their normal experience of the place.

FIGURE 5: *i-500 Projection*
FIGURE 6: *i-500 Server*

FIGURE 7: *Ecoid Installation Edinburgh Botanical Gardens*
FIGURE 8: *Ecoid Pods*
FIGURE 9: *Ecoid Data Feeds*

RENEGOTIATING REALITY THROUGH RECIPROCITY

The Arch-OS Operating System for building has been extended through the S-OS.org and CO-OS.org projects. Here the approach of collecting data from the residue of human interaction and manifesting it as experience has been extended; from the building to the inhabitants and then back out into the city. The S-OS project provides an Operating System for the social life of a City (in this instance the City of Plymouth). It superimposed the notion of an "OnLine" Social Operating System onto "RealLife" human interactions, modelling, analysing and making visible the social exchange within the City. S-OS is a collection of creative interventions and strategic manifestations that provides a new and more meaningful "algorithm" for modelling "Social Exchange" and proposes a more effective "measure" for "Quality of Life".

… where A(n) is probably the value of the Quality of Life, and [r = 1,2,…..N] are the numerous calculations that happen within a city. These calculations constitute an invisible fabric woven through the everyday processes of social exchange (a smile, a swap, a sneer) and can be understood as a Social Operating System when made manifest through

the use of digital technologies. S-OS was developed to propose and calculate a new "Social Exchange Index" based on a unique methodology that links the strategic S-OS applications and processes to the Governments "Quality of Life Indicators". These indicators are used by government to measure "success" and progress towards economic, social and environmental sustainability, calculating "quality" by measuring "quantity". They suggest that happiness lies somewhere at the end of a bell curve and that true love can be found in a slice of a pie chart.

The playful application of the principals established through Arch-OS has a more pragmatic manifestation in CO-OS, a Collaborative Operating System. CO-OS, a "Reciprocity Engine", is a cultural brokerage and social networking project which facilitates a radical new network model of collaborative creative production. The intention is to use the principals of reciprocity evident within Arch-OS and S-OS to generate new opportunities, practices and collaborations in mutually beneficial or reciprocal relationships capitalising on available resources and those generated through the new non-monetary trading model. The Reciprocity Engine uses interest-free credit so direct swaps do not need to be made. For instance, a member may earn credit by providing software-programming skills for one person and spend it later on access to another member's technological resources. Each transaction is recorded and generated by the network software system and evaluated by its members in a distributed relationship with all data open to all members, in a mutual credit system.

RECIPROCAL AND RECURSIVE LANDSCAPES

These initiatives provoke the disassembly of solid buildings and the re-manifestation of social exchange, expanding the physical structure into a dynamic model and invisible values generated by human networks into a measurable and, significantly, experienced form. The ecoids discussed below apply this modelling process to a mobile environment, from buildings and people to the landscape they inhabit. The potential with these projects is more than a reduction of a physical place and social exchange to numbers. The key issue is the transduction of temporal and spatial forms, things that are too slow, big or mundane, to human experience.

Like a matryoshka doll these Operating Systems endlessly fold in on themselves. Through ECO-OS, an ecological Operating System, the manifestation of collective activity and the calculation of social exchange are literally placed in the broader landscape. Eco-OS further develops the sensor model embedded in the Arch-OS system through the manufacture and distribution of networked environmental sensor devices. Intended as an enhancement of the Arch-OS system Eco-OS provides a new networked architecture for internal and external environments. Networked and location aware data gathered from within an environment is transmitted within the system or to the Eco-OS server for processing. Eco-OS collects data from an environment through the network of ecoids and provides the public, artists, engineers and scientists with a real time model of the environment.

Ecoids: are sensor devices (small pods) that can be distributed through an environment (work place, domestic, urban or rural). The sensors **(FIGURE 7** & **8)** allow environmental data to be collected from the immediate vicinity. The sensors can be connected together through the formation of Wireless Sensor Networks (WNS) that enable the coverage of an extensive territory (several kilometres). Data is broadcast through the mesh network to a base station for transmission to the Eco-OS server and from there as xml/RSS feeds to a variety of readers **(FIGURE 9)**.

LET ME TELL YOU ABOUT MY MOTHER

These things are invisible, yet we know they are there. The thingification of data and the transduction to experience is critical if we are ever to comprehend. Till then we will remain watching the tortoise lying on its back, backing in the hot sun. Our instruments are pouring out data, if only we could read it, but then maybe they are standing beside us, looking down – you're not helping! Why is that …?

NOTES:

AGA, B. PHILLIPS, M. et al Social Operating System. S-OS. Plymouth Arts Centre. 08/02/08-06/04/08. http://www.s-os.org/

DOYLE, Arthur Conan. The Boscombe Valley Mystery, p. 204, 1891. Series: The Adventures of Sherlock Holmes

"Constellation Columbia", model/prototype, 2003. Zerogravity, A Cultural User's Guide. The Arts Catalyst. 2005. Page 84–85 ISBN 0-9534546-4-9.

GARNER, J. P. (2005). "Stereotypies and other Abnormal Repetitive Behaviors: potential impact on validity, reliability, and replicability of scientific outcomes." ILAR Journal 46(2): 106–117.

PHILLIPS, M. "A Mote it is…" Art in the Age of Nano Technology, John Curtin Gallery, Curtin University of Technology, Perth, WA. For exhibition in 02/2010

SCOTT, R. Blade Runner. The Ladd Company. 1982.

SHAKESPEARE, W. Hamlet. Act 1, Scene 1, Line 129.

The S.T.I. Consortium was initially funded through a research and development grant provided by SciArt organisation (founded by the Wellcome Trust, The Arts Council of England, The British Council, NESTA, The Scottish Arts Council and Calouste Gulbenkian Foundation).

THOMAS, P. MALCOLM, C. PHILLIPS, M. i-500 Project. Public Art work for Curtin University Minerals and Chemistry Research and Education Building. Commission by Curtin University of Technology, John Curtin Gallery and Woods Bagot Architects.

Clemens M. Plank

UNIVERSITY OF INNSBRUCK, FACULTY OF ARCHITECTURE, INSTITUTE OF DESIGN.STUDIO2
INNSBRUCK, AUSTRIA
clemens.plank@uibk.ac.at

THE COGNITIVE USER OF ARCHITECTURE

Building a Conceptual Framework for the Exploration Between the Relationship of Architecture and its User Based on the Current Neuroscientific debate

INTRODUCTION

The following paper investigates the relationship between architecture and its user. The main hypothesis states that in order to acquire knowledge of this relationship, the focus has to lie on the user rather than on the built environment. Accepting and validating the user as a subjectively perceiving and consciously processing "actor" on the stage which architectural environments provide, the central claim is that architecture is a subjectively experienced product, emerging out of the user's process of "consciousness". This process of subjective experience is what we have to understand in order to gain knowledge of the relationship between architecture and its user.

USER

Taking a closer look at the meaning of the built environment it becomes apparent that this environment is not an "entity" removed from the subject (and its life). Particularly when we refer to lived-in space, we must add man as the user to the concept of mere constructed space (considering of room definitions, materials etc.), as well as his way of using space. The meaning of space is thus determined by its use. "The physical is only brought to life through its usage." (Lerup, 1986) Architecture without life – architecture that is not needed – has no meaning, or at least not yet. It acquires its meaning through its user. (Deusser & Friedrich, 2006)

Reflecting on architecture, however, means reflecting on an object, which is a subjective reflection by a user on an object. Every subject/object consideration unequivocally leads to an epistemological observation, since an observation that only investigates the outer environment and neglects the observing system is out-dated. A current major epistemological goal that science is devoting energy to is the phenomenon of consciousness. The science of consciousness already utilizes models of human consciousness, which provide fascinating insights into the subject/object relationship. These models shed a different type of light on the user/architecture relationship, portraying architecture as a profoundly subjective product of the human mind based on perception. This leads me to extend the classical user-definition and originate the *conscious user* in my endeavour to describe the *user/architecture relationship*.

SELF MODEL THEORY OF SUBJECTIVITY

The essence of the phenomenon of consciousness or subjective experience is that a single unified reality becomes present. If a world appears to you, you are conscious.

"But what does it mean to say that for all beings enjoying conscious experience necessarily a world appears?" According to Thomas Metzinger, "it means at least three different things: In conscious experience there is a world, there is a self, and there is a relation between both – because in an interesting sense this world appears to the experiencing self" (Metzinger, 2003, p. 5).

For that very reason Metzinger distinguishes three different aspects in his original question. First, he investigates what it means for a reality to appear. In the second aspect he deals with the question of how it can be possible that this reality can appear to a subject of experience. Finally, he sheds light upon how this subject becomes the centre of its own world, in other words how it transforms the appearance of a reality into a truly subjective phenomenon by turning it towards an individual first-person perspective.

BEING NO ONE

Metzinger treats these questions in detail and establishes the results in his Self-Model Theory of Subjectivity: "a phenomenally subjective experience consists in transparently modelling the intentionality relation within global, coherent model of the world embedded in a virtual window of presence" (Metzinger, 2003, p. 15). As far as Metzinger is concerned the *Self-Model Theory of Subjectivity* (subjective experience) consists of three elements: the globally available model of the world, the virtual window of presence, and transparency.

Metzinger states that every conscious system operates with globally available information, in other words information that is associated with being in a world. Therefore, a system that is conscious has to have an internal and dynamic model of the world. Consequently this model is a consistent internal representation of the world as a whole. According to Bernard Baas and his hypothesis of the *Global Workspace Theory* (Baas, 2003), the content of conscious experience is the content of a global workspace, which offers fast and flexible control of its outer but also inner behaviour to the system.

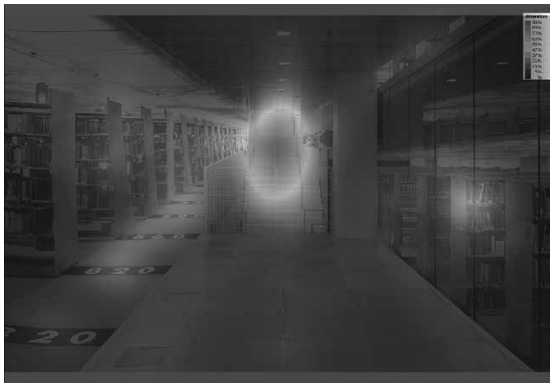


FIG. 1: *Interior image Seattle Library, pronounced area of interest – staircase*

FIG. 2: *displacement.13, interactive real-space experiment*

FIG. 3: *displacement.15, image showing a variety of atmospheres/moods possible*

FIG. 4: *displacement.13, test subjects queuing at entrance of installation*

FIG. 5: *interior image Seattle Library, two areas of interest – top of escalator and group of individuals in the background*

FIG. 6: *displacement.15, light environment, test subject interact playfully with the reactive light system*

Additionally, the system experiences this integrated model from a virtual centre point through a virtual window of presence. Whatever you experience, you always experience it now. The experience of presence which comes with our phenomenal model of reality is the central aspect. If the global model of a world or a part of it is embedded into the virtual window of presence of the system, then the produced representational content is the presence of a world. A conscious experience is the presence of a reality. Therefore, a conscious system could also have a great unconscious model of reality, namely the part that is not globally available.

Finally, a conscious system such as man needs a functional implementation of naive realism, so-called transparency. Phenomenal transparency in general, however, means that something particular is not accessible to subjective experience, namely the representational character of the contents of conscious experience (Metzinger 2003, p. 169).

EGO TUNNEL

Thomas Metzinger uses one particular metaphor to exemplify conscious experience: the *Ego Tunnel*. He writes: "What we see and hear, or what we feel and smell and taste, is only a small fraction of what actually exists out there. Our conscious model of reality is a low dimensional projection of the inconceivably richer physical reality surrounding and sustaining us. Our sensory organs are limited: They evolved for reasons of survival, not for depicting the enormous wealth and richness of reality in all its unfathomable depth. Therefore, the ongoing process of conscious experience is not so much an image of reality as a *tunnel* through reality." (Metzinger 2009)

Taking the concept of the *ego tunnel* into account, the debate touches upon the question if architecture, subjectively experience by the user, directs the users "awareness" on its – architecture's – self? This question accounts for much, since most theoretical concepts about architecture draw on undivided attention by the user.

In accordance with this neurobiological proposal we have to distinguish between two different types of subjective perception of architecture, assuming that one requires devoting attention and one does not. Consequently the question arises which kind of "architectural" sensation is 'strong' enough to prompt an architectural user to focus on the architectural environment and how is it possible to 'track' this with empirical data.

EMPIRICAL METHODOLOGY

In the course of the last years my research colleagues and I tested different types of experimental settings. Our experiments shared a main focus, expressly different types of subjective perception of architecture. The following three experiments shed light upon the development of our different empirical approaches.

One of the first experiments we conducted, the *displacement.14* investigation, posed the question: *What do people look at*? To evaluate this, test-subjects' eye movements were tracked as the individuals were shown predefined images on a monitor. The "eyegaze analysis system" then mapped very precise x–y coordinates of the subject's "gazepoint" on a computer screen showing images of the Seattle Library designed by Rem Koolhaas (OMA).

(FIG. 1)

The aim of the investigation was to search for *areas of interest* – architectural elements, different types of colours, or special materials – which attracted the users' observation.

On the positive side, this type of investigation, which focuses on architectural environments, provides objective data, however the setting of sitting in front of a computer screen has nothing to do with real subjective experience of architecture.

For that reason our next step was to design a full scale spatial experiment, the *displacement.13* experiment. The concept of this investigation was to design a technically augmented object or box and place it in an existing architectural environment. We equipped the box with tracking systems and so transformed the whole architectural situation into a real space experiment. **(FIG. 2)**

Alongside the tracking system, which was part of the inner installation of the box, the entire surface of the object was augmented with an interactive video-installation. The function of this interactive video-installation was to tempt users to enter the box, however since there was no common (in terms of appearance) door, the interactive system on the surface had to communicate the existence of an entrance. The research question we were interested in was what kind of sensation is "stronger", the architectural – no door – sensation or the interactive – door – communication.

The positive aspect of *displacement.13* was of course its spatial properties and appearance, but in contrast to our first experiment we did not produce suitable data.

For the subsequent real-space experiment we did not add a physical object to an existing architectural environment. *Displacement.15* extended such an environment with a reactive light-system, which was able to change the visual appearance of the architectural landscape in relation to the movement of the user. For this experiment we resumed the notion of the *area of interest*, tracking the test subjects' positions, rather than their "gazepoint" (on a screen), as they walked (individually) through the real space experiment. By tracking each respective person, we combined the different spatial situations with the given position of the user. Walking through the room, each user constantly changed the spatial appearance (the light situation) of our real-space experiment. Test-persons were asked to move through the installation for five minutes, in the hope that they would "find" a preconceived "ideal" light-configuration intuitively. **(FIG. 3)**

SELF AFFINE SYSTEM

My research has led me to understand my investigations as 2nd order experiments, since I investigate investigations. I have to point out an observation I made in accordance with the *displacement* experiments. I have come to appreciate the discovery that the importance and meaning of my work lies in the differentiation between purposeful attention (*apperception*) and its opposing process (*perception*), which does not emanate any attention from the origin of these sensations. My assumption, in conclusion of this series of experiments, is that the procedure of architectural perception is generally governed by the subtle process called *perception* and does not demand purposeful attention. Acknowledging some exceptions, my derivation is that when the user is not alone purposeful attention (*apperception*) moves away from architecture towards other individuals.

Revisiting *displacement.13*, my analysis is that the team "overestimated" the user and his ability to interpret our interactive surface. Users were unable to identify the entrance into the object, the clues the augmented surface provided did not suffice. Thirty minutes into the test situation one inquisitive user cracked our code and immediately started a queue in front of the entrance. This illustrates beautifully how peer behaviour and influence overruled individual response to a given environmental situation; the lack of adequate architectural guidelines for usage was no longer prevalent. **(FIG. 4)**

Displacement.14 made me discover a similar "effect". As you can see in **FIG. 1,** the area of interest shared by 40 test-persons was the prominent staircase in the middle of the image. Every picture shown depicted a pronounced specific architectural element, one of the images, however, was different. What we had not noted and considered when we selected the pictures, was that in one them people are seen in the back of the room. As the analysed image shows, the *area of interest* immediately shifts from architectural elements to the people in the background. **(FIG. 5)**

Displacement.15 was based on a reactive system and prompted several test-persons to play with it. Jumping back and forth, they soon discovered the logic concealed in the layout of the system and although this was not intended to attract attention, the reactive system did indeed engage users' interest. **(FIG. 6)**

I must assume that the selective process we experience as reality is intrigued and captivated by systems, which provide the existence of a *self-model of subjectivity* or mimic this type of a self.

CONCLUSION

Thomas Metzinger states in his writings that phenomena like the *Ego Tunnel* are products of an evolutionary process to secure the survival of the individual. In the same way, within the process of perception a technique of selection has evolved, to manage the limited resource of focused attention. The focus demanded by self-affine systems, however, could be interpreted as an important precondition for social and cultural developments. If we take this for granted, the question arises what would happen if the architectural environment is augmented with responsive or interactive systems? How would this affect and influence our limited possibility of focused perception?

REFERENCE

BAAS, B. 2003, The global brainweb: An update on the global workspace theory, Guest editorial, Science and Consciousness Review, October 2003.

METZINGER, T. 2003, Being No One, The Self-Model Theory of Subjectivity. Cambridge, MA: MIT Press.

METZINGER, T. 2009, The Ego Tunnel, The Science of the Mind and the Myth of the Self, New York: Basic Books, p. 6.

LERUP, L. 1986, Das Unfertige bauen. Architektur und das menschliche Handeln. Braunschweig: Vieweg & Sohn Richard Rorty, p. 101.

DEUSSER A., Friedrich K. 2006, 'Geplante Unbestimmtheit, Zur Architektur in ungewohnter (Not-)Lösung', Architecture meets Life, GAM03, New York/Wien: Springer Verlag, p. 112.

Barbara Rauch

ASSISTANT PROFESSOR
ONTARIO COLLEGE OF ART AND DESIGN
TORONTO, CANADA
brauch@faculty.ocad.ca

Michael Page

SYNTHETIC EMOTIONS

The more synthetic reality becomes, the more we long to understand the "real" reality. We need to accept that we build and work in environments that are already synthetic, augmented realities. Data we use derive from actual and digital realms, and it is this coming together of diverse data information that interests us. The vastness of data that we have to deal with and the speed of transfer of data shall be addressed briefly.

In *Media Dopplers*, Chad Scoville (2009) posits his concept of the "outformation" age, where the speed of information has surpassed the level of human interactivity. Information and decisions are happening on nanoscale level outside of our constructed understanding of reality. Scoville touches briefly on the bizarre banality of Reality Television as a reflection of a failed capitalist society and "western dept class". Cultural and critical production are left to machines and software agents. "AI is already here, and it doesn't look like it's supposed to", he argues. Search engines are more responsive to semantic inquiry; these "virtu-real" entities, according to Scoville, are in "varied states of consciousness". The images of ourselves that we place in YouTube, Facebook, etc. are our "media dopplers". He compares the act of mediating oneself to a form of time travel where one has already been cloned, and he suggests further that we might well live already "in a network which is the product of this process": "In the sense of the media doppler, the infinite cloning loop of extraneated superspace, informatic control mechanisms bot themselves towards complete urbanity of virtualism,… [t]he copies outnumber the originals. … it is just computers talking to each other to produce more silicon".

Rauch became interested in this kind of time travel and the space where the clone looks like its copy and yet, at some point, she returned to the actual world with the desire to produce some of these synthetic creatures with their emotional facial expressions and features from both worlds. What reality do they belong to? And what does realism stand for in the postmodern condition?

A critical aspect of her new body of work is the investigation of 3D scanning and facial surface mapping, using facilities and expertise at UCL and now OCAD's research labs, in particular the e_Motion Lab where she conducts qualitative transdisciplinary research with the aim to bridge the Art-Science divide by investigating and evaluating new research structures and the ethical implications of newer technology-based artistic practices. She hopes to articulate new forms and procedures within these new research structures.

Issues of human emotional life have been addressed by international contemporary artists, including Bruce Nauman, Tony Oursler and Bill Viola. These artists in particular have used electronic and digital media to express ideas within this field of research. Rauch's position, however, is to expand on the evolutionary scientific aspects of human emotion, facial expression characteristics, and depiction of emotion through the use of new and emerging technologies. The application of technologies such as holographic images, Rapidform printing, and 3D animation, offer possibilities for artist practitioners to develop new techniques to present emotion, challenge human perception of emotional response and, by extension, challenge our current anthropocentric understanding of the world. [1]

Rauch completed the initial stages of her inquiry into 3D-surfaces of animated facial expressions in animals and humans at the Sensory Computer Interface Research and Innovation for the Arts (SCIRIA) research unit, University of the Arts, London, UK (UAL). Her research and artistic practice builds upon the metatheory of the continuity of the species suggested by Charles Darwin in 1872, whereby facial expressions were identified as being not unique to human beings, and as the product of evolution and physiology. Theories of emotions in the work of Damasio (1999), LeDoux (1996) and Ekman (1998) are also significant to her work. Ekman's work is particularly relevant to the study of human facial expressions, while she returned to Darwin (and Ekman's commentary on Darwin's studies) for details on animal facial expressions.

Dr. Rauch has experimented with taxidermy of stuffed mammals which were digitally combined with human faces. This is not a case of merely morphing surface information. By selecting characteristics of an averaged human face from a database, identifying and morphing facial emotional expression indicators, one can create distinct facial expressions on a human face that are combined with the 3D data from the animal scan, thereby creating a unique synthetic expression of emotion **(SEE FIG. 1)**.

Building upon this research in the evolution and portrayal of emotions through human gestures and facial expressions, Dr. Rauch utilizes new technology, in particular digital scanning devices, holography and special effects animation software to refine and advance the field. A 3D high-resolution laser scanner captures still animal and human faces and body gestures and then a haptic virtual pen is used to manipulate the data. Using FreeForm software, Rauch sculpts this 3D data in a virtual setting whilst receiving haptic feedback. The data can then be animated for screen based work, or printed in 3D using rapid prototyping machines. We have included printed samples where we were testing several printers in Rapidform Labs in the UK and Canada **(SEE FIG. 2)**.

These works manifest a return to the tangible in synthetic imagery. In addition to creating digital objects we aim to merge and morph data in mixed realities (at a time when

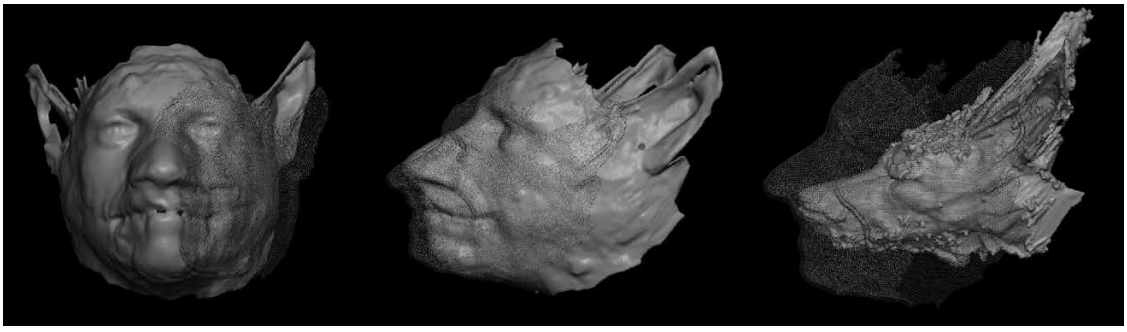


FIG. 1: *"Synthetic Faces". Collage of digital 3D scans of animal and human faces*
Artwork and copyright: B. Rauch, 2009

FIG. 2: *"interFaced". Printed object, Z-Corporation Rapidform*
Artwork and copyright B. Rauch, 2009

3D scanning devices have become more available/affordable to institutions/labs/researchers).

Previously, it was either in the computer or outside, but now the data can be merged, introducing new realities. This adds to building new realities for experience and emotional involvement. We are more concerned with the data as it derives from actual, real objects/subjects; the obsession with the real proves true.

A new additional method includes using holographic imagery in either still or short animations. Rauch hopes to visualize through critical experimentation what evolution has selected and accommodated for human emotional expressive behaviour. Through Professor Michael Page, Rauch has access to the services and leading-edge HALORAIL camera and holographic systems of the Photon League, a not-for-profit, artist led facility in Toronto. With

these technologies Rauch can experiment with techniques to explore and display the synthetic human-mammal expressions of emotion and gestures. (A first test series has been conducted and we hope to present production stills at the conference).

Another experimentation with the Digital Holography setting encouraged us to continue with this case study and bring our emotion project to The RAIL Project.[2] We began our work several years ago but only received funding for the research last year. The next step is to implement the "optical flow" technology which will intelligently interpolate images to create the requisite number of frames for printing from N-frames. The RAIL device will also find application real-time computation and viewing of 3D constructs.[3] **(SEE FIG. 3)**

Our joint case study about synthetic emotions can be described briefly as a construction of the 7 universal emotions performed in stages. With the holographic device we captured individual scenes that we hope to use as sketches for further study. The prototype hologram uses "channels" to present a sequence (series) of emotional gestures that appear to occupy the same dimensional space. The transitions from image to image (emotion to emotion) are abrupt. The same concept realized using the RAIL device would, being digitally processed, result in a perfectly registered scene that morphs from one emotion to another.

Modern holography, depending on the subject, is able to replicate objects in a way that is virtually indistinguishable from the original. Digital holography has added the dimension of true colour to the mix of visual cues to the brain that make up reality. A study of human response to holography shows there is a direct correlation between what is seen, the number of visual cues, and the viewers' response.

The RAIL Project aims to combine 3D holography with SensAble haptic technology. The marriage of haptics and holography takes recent developments in both haptics and digital holography to create a synthetic experience for the user involving animated holographic scenes that share the same dimensional space as the interactive, haptically-driven CG imagery.

We ask whether the digital object becomes more real with new interfaces and has more affordable output possibilities. Our senses have not yet adapted to cyberspace and augmented realities. But it remains to be seen what hybrid technologies will come from the many synthetic experiences that are being developed: as people demand more, at stake is a heightened sense of synthetic reality.

Emotional gestures, combined with this powerful imaging tool, enables us to command the viewers' attention and study their reaction, e.g. a small video camera behind the hologram can record viewer reaction.

CONCLUSION

The work series on facial expressions and gestural emotions uses data from diverse constructed realities. Using the above 3D technologies we also study the expression on viewers' and subjects' faces. Compared to current work on nanoscale level, this work encourages ambiguity and the blurring of realities. While the latest research with Nano technology has opened yet another insight to the world of real matter, constructivism teaches us that we cannot experience reality as it is. What we can learn from it is precisely what reality is not. When we observe nature, we hypothesise and continuously correct those with our new experiences. Yet even if we try to find rules and order for nature, we can predict and calculate but we still cannot know the real.

FIG. 3: *Shown are layers used to create the Atwood composition. The Atwood hologram was produced in collaboration with photographer George Whiteside. Digital elements by Ryan Fraer and Sang Hoon Hwang.*
Copyright M. Page

In Leonardo (Vol. 42, No. 1 and No. 2 in 2009), we find a recurring debate on Nanoscale research. 'Truth and Beauty at the Nanoscale' and 'Fact and Fantasy in Nanotech Imagery' discuss the level of accuracy and truth in the imagery that this technology can offer. On the one hand we have a tactile perspective of nanoscale particles since we can now touch with haptic devices representations of data but on the other we have to accept that these images are interpretations of data. Often the software simplifies for aesthetic reasons, so we are confronted with images that are not representation of an external reality. We suggest that Nanotechnology adds to an understanding of constructed, remediated and augmented realities that have no clear borders.

There is no virtual and real as separate worlds; the digital/virtual have long been embraced. We are not only surrounded by technological interfaces that help us to interpret the real, we live with these technologies, create, communicate, think and feel with them.

NOTES

1) To stress the importance of emotion research and facial expressions towards an understanding of conscious reality, I introduce here a paper "Facial expression form and function" by

Susskind and Anderson, who argue for an evolutionary approach to understanding human facial expression. For example they show that expressions of fear and/or disgust alter the biomechanical properties of the face, such that fear increases while disgust decreases sensory exposure. This has been observed cross-species namely on cows, chimpanzees and human beings.
2) The RAIL project is run by artists who want to include real-world subjects in natural lighting or studio lighting in digital holographic compositions.
3) Michael Page's work has been about blurring the lines between reality and synthetic images. In a recent collaboration with workers on the RAIL project, he produced a composition that combined footage of Canadian author Margaret Atwood (shot in the studio) and CG elements including a tropical rain forest and a colourful bird to produce an animated scene that results in an interactive experience for the viewer.

BIBLIOGRAPHY

DAMASIO, A.R., 1999. The Feeling of What Happens: body, emotion and the making of consciousness. London: Heinemann.
EKMAN, p. , 1998 ed. The Expression of the Emotions in Man and Animals. London: Harper Collins Publishers.
GAVIRIA, A. R., 2009. When is Information Visualization Art? Determining the Critical Criteria. Leonardo, Vol. 41, No. 5, pp. 479–482. Cambridge, MA: MIT Press.
GOODSELL, D. S., 2009. Fact and Fantasy in Nanotech Imagery. Leonardo, Vol. 42, No. 1, pp. 52–57. Cambridge, MA: MIT Press.
LEDOUX, J., 1996. The Emotional Brain: The Mysterious Underpinnings of Emotional Life. New York: Simon & Schuster.
SCOVILLE, C., 2009. In <CTheory.net>, accessed July 2010.
SUSSKIND, J.M. and ANDERSON, A.K., 2008, Communicative & Integrative Biology 1:2, 1–2; October/November/December 2008; Landes Bioscience, www.landesbioscience.com <accessed July 2010>
TOUMEY, C., 2009. Truth and Beauty at the Nanoscale. Leonardo, Vol. 42, No. 2, pp. 151–155. Cambridge, MA: MIT Press.

LINKS:

OCAD University: http://www.ocad.ca
SensAble haptic technology: http://www.entactrobotics.com/
The RAIL Project http://www.therailproject.ca

TERMS:

Digital holography is now a commercially available full-colour process. Two service bureaus exist in Canada: Photonix Imaging (Toronto) and Rabbit Holes Inc (Ottawa). The printing process begins as a series of digital files, typically derived from 3D computer graphics applications such as 3D Studio Max or Maya. Computer graphics production can be a labour-intensive, costly process when one wants to print a hologram of some pre-existing object, such as product shots. This limitation greatly impedes the adoption of this technology as a viable medium for real world objects.

The RAIL Project (Real-world Acquisition & Image Liaison). A dimensional scanner that is programmable to perform a multitude of recording geometries using almost any detector (camera), that can interpolate using intelligent optical flow technology. The device also records meta data, mandatory in 3D compositing. Auto-stereoscopic: not requiring special glasses or head gear.

FIG. 4: *(Copyright M. Page)*
The RAIL device records geometrically correct images for digital holographic printers. Images can be recorded in natural light or studio light and FTP'd to the service bureau in Canada. The device also records meta data for 3D compositing and uses optical flow technology to create the in-between image required for the hologram.

Julian Rennie

DEPARTMENT OF ARCHITECTURE AND LANDSCAPE
UNITEC, AUCKLAND, NEW ZEALAND
jrennie@unitec.ac.nz

"REAL-EYES-ING" THE MINIATURE

The photograph: **FIGURE 1**, shows the reader an architectural scale model of, (what looks like), a house, with a digital camera poised at the opening of one of its interiors. We know this by our now everyday use of digital cameras and what they look like. The camera sets the scale of the photo and also sets the scene of what is to follow. This model is a small version or "miniature" of the intended real house, (yet to be built). Because of the miniature's size relative to us, the viewer, (as a human being), allows the designer to check the form and proportions of the project as a whole, that is to assess it in "the round." Similar to how the sculptor Henry Moore, liked to calibrate the three-dimensional Marquette by having it mounted on a revolving pedestal, allowing the miniature to be rotated and assessed continuously from all sides as he worked, later if the sculptor was satisfied, then work would proceed to a full size version.

Similarly such architectural scale models are also very useful for the designer when presenting the scheme to intended "Client" (in the attempt of persuading that Client to build the real thing). Likewise, for the architectural student the scale model becomes a way of developing and testing their design thoughts in a mini-3D version and is also useful as a presentation device within the critique, (or more commonly called: "The Crit"), process.

From the other two photographs: **FIGURES 2** & **3**, the reader may or may not guess are digital photographs taken by the same camera, (as shown in **FIGURE 1**), but taken inside that model, (as though one could be small enough to get inside the model – the two resulting images are what such a Lilliputian person would see). The viewer of these two photographic images could be persuaded into thinking the images are real, (i.e. images of a "rea" or life-sized house interior), particularly if **FIGURE 1** was not present. Within my model making classes I refer to this technique as "verisimilitubing," a word made up from "tubing" and verisimilitude. The placement of the camera inside the miniature model is rather like "tubing," as in "cave tubing," which is a term used to describe how one travels along an underground cave water system whilst riding on a car inner tube. And, verisimilitude, meaning the "appearance of being true" (Sykes, 1976, p. 1292).

It is my contention that the reason why such images are so compelling is because real sunlight is acting upon the real model's physical materiality to produce a "life-like" affect, which can compel the human eye and brain into believing they are "real." In comparison, the light source for a virtual image is a "fantasy" sun, and the light affects have to be "played" with, to get the requisite affect sort by the designer. That is, no matter how sophisticated the software, the quality of light will always be artificial. The technique I am ascribing here is the passive use of natural light upon physically constructed miniature. This is also quick and cheap and thus makes it accessible to all designers, especially students.

These models, although small, react to sunlight in much the same way that the proposed building would, and thus links into Le Corbusier's often quoted definition of Architecture:

> *Architecture is the skilful, exact, and magnificent play of volumes assembled in light. Our eyes are designed to see forms in light; shadow and light reveal forms … their image is exact and tangible, free of all ambiguities. This is why they are* ***beautiful*** *… Everyone agrees on this point, children, primitives and metaphysicians. It is a prerequisite of plastic art. (Towards a New Architecture, p. 16).*

Therefore, I am proposing that physical models remain an important part of the student/designer's repertoire despite the onslaught of virtual models generated via computers. Compare for instance the virtual images and "fly-throughs" on the TV programme "Grand Designs" vs. say the exhibition of Peter Zumthor's office models, encompassing over 2000 sq.m of space, in the LX Factory, Lisbon, (Movingcities.org. 2008). The former, television show uses images that are often embarrassingly bad, (lacking detail, vacuous, flickering/jerky type images), one wonders how they could sway a client. Whereas the latter exhibition of actual scale models, (incorporating varying scales and sizes), were often large enough to put one's head inside, and therefore able to be savoured from any angle and for any length of time.

The escalation of our daily engagement with the cyberworld, (e.g. dealing with emails, on-line chat, on-line shopping etc.), although often necessary, I wonder: "Is it satisfying in a holistic way?" Busch argues that in fact we need in equal and opposite measure to partake in "tangible experiences … [that we crave, or] demand we use our abilities to see, smell, hold and touch in a real and visceral way[s]," (2004, p. 44). Making things with our hands is still a very satisfying human experience, (refer also to Pallasmaa's 2009 book: *The Thinking Hand* for a full breakdown on this subject). Often as design tutors, we have trouble getting the student's head "out of the box," i.e. away from the computer screen, and getting the student to think about what they are really ascribing with their virtual pixels. In addition, I often find my model making sessions within the design studio seem to have an air of relaxation and keen industry amongst the students. Compare this to the tension and frustration within the same body of students whilst attending a computer lab, (building virtual models); this seems to amplify Busch's comments. In terms of modelling elements, Schilling says:

> *"The best way to simulate a real material is to use it in the model. For instance, model builders can*

reproduce fair-faced concrete in a […] scale model using concrete. They need only to build miniature formwork, fill it with a fine mixture of cement and sand, pack it down and let it dry. The results are impressive! In this case, model making scales down the entire construction process, simulating not only the finished object, but the process itself…Modellers often achieve a stunning effect with their interior models, making it [often] impossible for viewers to distinguish between the photograph of the modelled space and the real spatial situation. (2007, pp. 18–19).

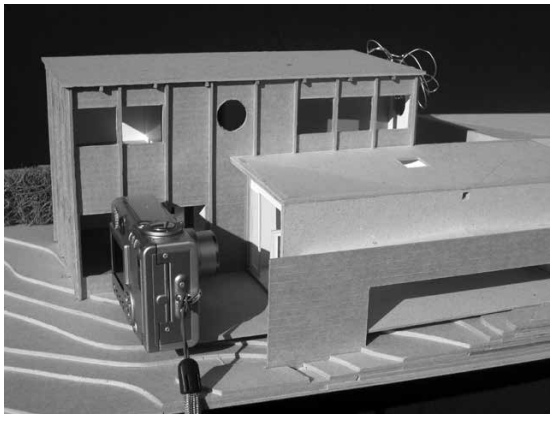
Other model-making techniques can involve transformation of material, with careful consideration of the selection, e.g. in **FIGURE 2**, the model walls are actually made of a grey packing case card, (which also happens to be one of the cheapest cards available) – but it has the grey substrate going the whole way through, (compare this with 'normal' cardboard which generally consist of a different coloured core to the outer layers). Thus at wall junctions, the grey card jointing appears seamless and could be read as a monolithic material such as plaster render or concrete, making something more real than it really is.

The type of models that is being referred to here, are not "railway" type models, (i.e. where every blade of grass is rendered), there is not time, nor money in the profession for such toys, rather I am referring to "concept" type models. These types of models have some abstract qualities about them, (e.g. they do not have miniature chairs and tables like a Doll's house and thus do not fall into the realm of transcendence in time and space that Stewart discusses in her 2003 book: *On Longing*). If one reconsiders **FIGURE 3**, for a moment, it looks like a staircase descending from the upper floor, likewise in **FIGURE 2**, the opening, through which the viewer can see a purple haze beyond, looks like a door opening, these built elements not only ascribe the purpose of each space, but set up the scale of each image and set in motion the process of how we perceive this image; but it is the captured sunlight that activates these spaces. I think the reader would agree that even the blurring of the door frames and wall end is not disturbing, it actually adds to the sense of depth, and it seems as though those elements where indeed very close to the picture plane/viewer, thus adding more realism to the final image. Sontag affirms:

"A photograph is both a pseudo-presence and a token of absence. Like a wood fire, photographs… are incitements to reverie…such talismanic uses of photographs express a feeling of both sentimental and implicitly magical: they are attempts to contact or lay claim to another reality." (1979, p. 16).

I contend that the digital images of the concept model, (such as in **FIGURES 2** & **3)**, can be likened to the images that a real estate agent might use with a potential client, giving enough clues and cues to make the person"desire" the space, and see that it is suitable as a "home" for themselves and their belongings.

The digital camera image, as we all know compresses the 3D reality into a 2D image, or as Morris states: "Photographs collapse the three-dimensional model back into pictorial and perspectival space, back to the two



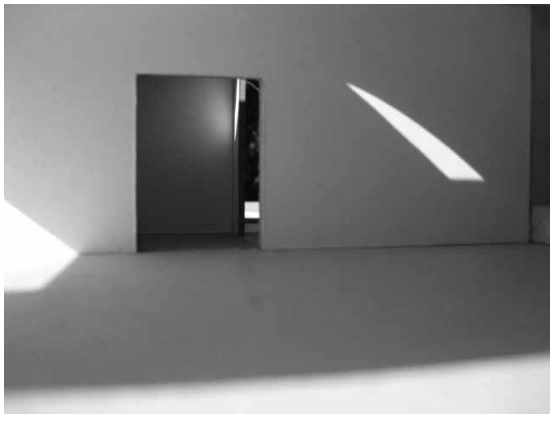


FIG. 1–3

dimensions" (2006, p. 72). These interior images of the model seem to rather magically tighten-up and enhance the model beyond itself. Often the model workmanship doesn't appear so bad, I have often heard students say: "Whoa!" when they compare the realised interior photographic image and look down at the corresponding model on a desk adjacent, (the inference being: "did that rather 'manky' model produce that life-like image?").

There clearly is some phenomenon at work here, and I argue it is a type of transmogrification, The Concise Oxford Dictionary defining this word as: "transform esp. in magical or surprising manner" (Sykes, 1976, p. 1233). A transformation here of physical material and scale

involving the magic of the photograph to capture the natural light effects, that in fact can lead to surprising life-like images. A pleasant surprise in the above model was the natural mixing of reflected light. Notice in **FIGURE 3**, there is a red coloured balustrade and blue ceiling. Then consider again **FIGURE 2**, and one can see the resulting purple wash over the walls beyond the wall opening. The light reflecting off these surfaces combines to produce something that was unexpected for the designer/model maker. Nature was merely caught via the accuracy of the digital camera, (no Photoshop was used). Therefore no expensive software was required, and no time was spent building up virtual effects. "Photographs really are experience captured, and the camera is the ideal arm of consciousness in its acquisitive mood." (Sontag 1979, pp. 3–4).

Susan Stewart talks in her discussions about how writing is for the writer vs. how it is for the reader: "What disappears in writing is the [writer's] body and what the body knows – the visual, tactile, and aural knowledge of lived experience" (1993, p. 44). Thus when the reader picks up the text he/she may get glimmers of the author's bodily knowledge and learnings from the written descriptions, but often may not. If this is indeed the case, I argue that this "knowledge of lived experience," the labour, even the "love" of the model maker, (and the reader may assume here, that the designer and the model maker are one in the same), are then embedded in the physical making of the 3D model. The viewer/client can see the time spent, the craftsmanship within the built model, giving a strong impression of the designer's commitment to the project and that perhaps they should give this presentation some consideration and respect. (In comparison: with 2D drawings and virtual renders, clients often think that "they are mere lines/pixels on a page/screen that just got there," there is no evidence of the labour that went into generating them, and they could be readily changed on a whim). Whereas the designer is in fact looking for a commitment from the client to the scheme: perhaps some changes need to be made to the design, sure, but not changes for changes sake.

In summary then, with this "verisimilitubing" type technique of easing a small sized digital camera into the interior of built three-dimensional miniature models, the resulting outward looking digital photos can produce very "realistic" images of what it might be like to inhabit these proposed spaces. Using natural light, the careful manipulation of the model fabric and removal of some scale indicators, the realized, (or "real to the eye"), digital images can be perceived as life-like or "real". These images clearly show some sort of transmogrification at work, if one compares them to the actual model sitting on the tabletop, thus making a reality really real.

REFERENCES:

BUSCH, A. 2004. Geography of Home: Writings on Where we Live, New York, Princeton Architectural Press

GUITON, J. (ed.) 1981. The Ideas of Le Corbusier On Architecture and Urban Planning, New York: George Braziller.

MORRIS, M. 2006. Models: Architecture and the Miniature, Chichester, UK, Wiley – Academy.

Movingcities.org. 2008: Peter Zumthor Experimentadesign Lisbon, [Accessed 6 July 2010]. http://movingcities.org/movingmemos/peter-zumthor-buildings-and-projects-lisbon/

PALLASMAA, J. 2009. The Thinking Hand Existential and Embodied Wisdom in Architecture, Chichester, UK, John Wiley & Sons Ltd.

SCHILLING, A. 2007. Basics: Modelbuilding, Basel, Birkhauser

SONTAG, S. 1979. On Photography, London, Penguin Group.

Sykes, J. B. (ed.) 1976. The Concise Oxford Dictionary London: Oxford University Press.

STEWART, S. 1993. On Longing Narratives of the Miniature, the Gigantic, the Souvenir, the Collection, Durham, North Carolina, Duke University Press.

Clarissa Ribeiro

SCHOOL OF ARTS AND COMMUNICATIONS,
UNIVERSITY OF SÃO PAULO, BRAZIL
CAiiA-HUB, PLANETARY COLLEGIUM, UNIVERSITY
OF PLYMOUTH, UK
almeida.clarissa@gmail.com
http://gogogoch.net

SPACELESS SPACES: FROM IMPRESSION TO IMAGINATION

FIG. 1: *Instants of Metamorphosis 02*

ESCAPE ATTEMPTS (FIG. 1)

More than "beginning to believe", like David Wonjnarowicz in the 1980s, that "[…] one of the last frontiers left for radical gestures is the imagination" (Wonjnarowicz 1989 cited in Lippard 1997, p. xxi), I'm trying to find ways to capture the invisible movements of information through creative processes. Information that builds it, models it, generates both the process itself and the artwork. And, beyond the concept of information itself, the intention is to structure a methodology-like "perspective" to help the ones involved in creative practices in dealing with information and meaning.

How can we consider "[…] our total relationship to a work of art, in which physical moves may lead to conceptual moves, in which Behavior relates to Idea?" (Ascott 1964 cited in Lippard 1997, p. 1). Could it be interesting to think about this question and structure this methodology-like perspective, or does everybody know and master it intuitively, and is it a superfluous knowledge? What is the validity of a scientific-like methodology to help study creative processes? Could it be more interesting to architects than to artists? Bernard Tschumi once observed that "Architectural theory shares with art theory a peculiar characteristic: it is prescriptive." (Tschumi 1975, p. 139) It is in the realms of "in-between" art, sciences, architecture, and several other creative areas of human knowledge, that the present approach could work – in an prescriptive way, being possibly useful as nothing more than a "way of imagining." We can recall the words of Mel Bochner in the 1970s and consider the following:

> *"The root 'image' need not be used only to mean representation (in the sense of one thing referring to something other than itself). To re-present can be defined as the shift in referential frames of the viewer from the space of events to the space of statements or vice versa. Imagining (as opposed to imaging) is not a pictorial preoccupation. Imagination is a projection, the exteriorizing of ideas about nature of things seen. It re-produces that which is initially without product." (Bochner 1970 cited in Lippard 1997, p. XV)*

And despite the fact that the focus of this paper is not to discuss the concept of image; the notion of imagination presented in the above citation is central to the methodology-like perspective we are presenting in order to talk about a sort of spaceless spaces generated by actions, by the flow of information from one level to the other in a complex multilevel organization that is "the creative process and its emergences."

SPACELESS SPACES: IN THE IN-BETWEEN REALMS

From the sociology of space; a sub-discipline of sociology, it is possible to reflect on spaces as constructions from action of living entities in dialogue with technology/media, constituted in processes of perception, recall, or ideation to manifest itself as storied structures. Foucault, talking about Utopias – fundamentally unreal spaces – and Heterotopias – places that are outside of all places – believes that, in between them there might be a sort of mixed, joint experience, which would be the mirror. To Foucault, the mirror is a utopia, since it is a placeless place: "In the mirror, I see myself there where I am not, in an unreal, virtual space that opens up behind the surface; I am over there, there where I am not, a sort of shadow that gives my own visibility to myself, that enables me to see myself there where I am absent." (Foucault 1967) The Foucault considerations illustrate the intimate connection between place and the subject experience of what is real and unreal. In the article "A Sense of Place," Robin Walker (1977) affirms that "Event and place, in memory, are inseparable and so action and environment are inseparable." Walker believes that "On a purely functional level, one knows that environments are designed for actions, or potential actions." (Walker 1977, p. 17) Referencing various philosophical discussions around the concept of space, Bernard Tschumi in "Questions of Space: The Pyramid and The Labyrinth (or The Architectural Paradox)" published in the September/October 1975 issue of Studio International, argues that, despite the peculiarities of philosophical thoughts, from the Aristotelian point of view to Descartes, Leibniz, Kant, until the mathematical developments on non-Euclidian spaces, "[…] space was

generally accepted as a '*cosa mentale*', a mental thing, a sort of all-embracing set with its subset, such as literary space, ideological space and psychoanalytical space." (Tschumi 1975, p. 137) According to the Architect (1975, p. 138), in the early 1970s, "The renewed importance given to the value of conceptual aims in architecture became quickly established" and, "Escaping the predictable ideological compromises of building, the architect could finally achieve the sensual satisfaction that the making of material objects no longer provided." (Tschumi 1975, p. 138)

This brief introduction of some discussions around the concept of space is just to focus the reader's eye in a place where space is immaterial and not dimensional – *cosa mentale*, generated by complex webs of meaning; imagination. Considering this perspective, the notion of storied spaces explored by Basking in the article "Storied Spaces: The Human Equivalent of Complex Adaptive Systems" (2008), could be interesting as a way to incorporate the concept of space from an immaterial, imaginary perspective, connecting and studying it as emergences – in the form of narratives – generated by the actions performed by subjects involved in creative processes. Though the view of Basking in the above mentioned article is being used just as a starting point for thinking about storied spaces, the notions presented by the author are pertinent, and helpful in understanding the concept.

According to Baskin, storied spaces could be described as the collection of stories constructed from our experience, in the dynamic of interpreting the context in order to act. For Baskin, the dynamics of such storied spaces is the interaction of two very different types of stories which reflect Gell-Mann's (1994) theory of how complex adaptive systems learn. According to Baskin "The first type of story is the dominant narrative, the fixed accounts of past events, the historically grounded, control-oriented retellings, whose function in storied spaces is to keep our behavior congruent with ways that have always worked, much like complexity's attractors." (Baskin 2008, p. 5) The second type is the antenarrative (Boje 2001 cited in Baskin, 2008, p. 6), that opens up the possibility to create meaning from an event. According to the author, "Antenarrative is the flexible, ongoing attempt to explain what is currently happening […]. In storied space, antenarrative provides flexible feedback to people about recent happenings that may call for behaviors quite different from those driven by their storied space's narratives." (Baskin 2008, p. 6) Talking about stories and their related narratives, and taking into account a complexity perspective, the considerations Stephen Denning points out are interesting. According to Denning, "The fact that narratives are not mathematically precise, and in fact are full of fuzzy qualitative relationships, seems to be a key to their success in enabling us to cope with complexity." (Denning 2000, p. 113) This line of thought has some aspects in common with hermeneutic approaches that incorporate complex science's logic to observe the emergence of meaning and consciousness in reading processes, a sort of "radical hermeneutics" (Rasmussen 2002). In hermeneutics, meaning is understood as something that is constructed as a boundary between the actual and the possible being, "[…] neither one nor the other: it is the relation between the actual and the possible. Meaning is a certain way of behaving where attention is direct at one possibility among many, where the actual receives/is invested with meaning on a horizon of possibility." (Rasmussen 2002, p. 7) Discussing textual interpretation and complexity, Rasmussen (2002) mentioned that Gadamer (Gadamer 1965 cited in Rasmussen 2002, p. 2) conceives the hermeneutic circle as "[…] a process whereby the interpreter moves back and forth between empirical/material description and theoretical/analytical concepts." (Rasmussen 2002, p. 4) This notion of a hermeneutic circle as the continuous interplay between part and whole in a systemic context is interesting to help understand the nature of meaning and its relation with the actions performed. According to Baskin, Gell-Mann (Gell-Mann 1994 cited in Baskin 2008, p. 5) suggests that complex adaptive systems learn through the way they process information. They learn as the conditions, the context, change.

In the elaboration of the "Mathematical Theory of Communication", Shannon's co-author Warren Weaver (1949), considers that the concept of information developed in this theory at first "[…] seems disappointing and bizarre – disappointing because it has nothing to do with the meaning […]." Nevertheless, he thinks that the analysis proposed "[…] has so penetratingly cleared the air that one is now, perhaps for the first time, ready for a real theory of meaning." (Shannon & Weaver 1949, p. 116). Considering the contemporary discussion on information and meaning, the observation of Weaver was pertinent. For Cohen (2003), the ability to create apparently contradictory meanings from the same reality is a central quality of all complex systems. Meaning emerges from the storyteller's particular choosing and sequencing of events. Luhmann (1986) proposed to consider the processing of meaning as the *autopoietic* operation of both social and psychological systems where human languages allow for the construction and exchange of models using metaphors that enable us to communicate meaning. According to Maturana (2000), when expectations are exchanged, the development of a non-linear dynamics of meaning can emerge by information exchange processes. For Luhmann, "[…] meaning is a representation of complexity. Meaning is not an image or a model of complexity used by conscious or social systems, not simply a new and powerful form of coping with complexity under the unavoidable condition of enforced selectivity." (Luhmann 1990, p. 84) As a central quality of a complex system, this sort of *autopoietic* operation, meaning can be considered the metamorphic emergence in information exchange processes. And if we consider that meaning could ultimately be the own metaphorical structure that allows dealing with complexity and running the information exchange process, this process is itself more meaningful than an informational one.

FROM IMPRESSION TO IMAGINATION

Considering our system/creative process as structured in several and interrelated levels of organization, each level could be composed by several and interrelated bubbles of meaning. The bottom instance represents the concept of what the whole work should be. The wide instance represents the versions of the work (of art?) ready to be presented/experienced – an emergence from the system dynamic. The instances in-between represent the collective work, the system's parts working together, interacting, influenced

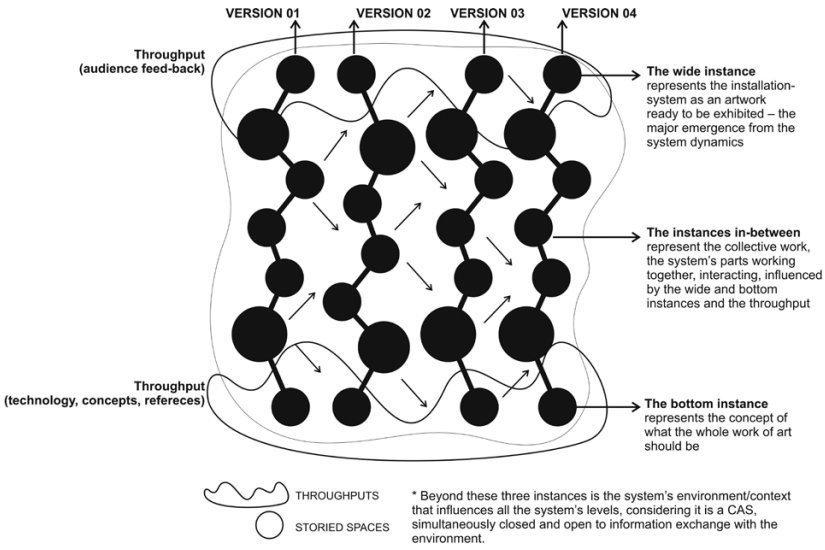


FIG. 2

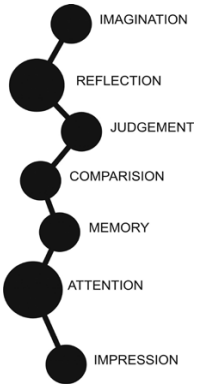


FIG. 3

by the bottom instances and by the objective of producing a work. Beyond these three instances is the system's environment/context that influences all the system's levels in the form of throughputs. Considering this organizational structure, the intention is to work with the concept of storied spaces as a way to visualize emergences that could be used in their own processes, re-integrating and influencing it. One way of reaching this objective is by designing a kind of metaphorical structure to map and group the narratives.

FIG. 2 DIAGRAM: LEVELS OF ORGANIZATION

Étienne Bonnot Condillac in his *Traité des Sensations* (1754) mentioned in the Jorge Luis Borges' tale "Two Metaphysical Animals", as related to the problem of the origin of ideas, presents an interesting metaphor concerning the processes of perception and consciousness. The Condillac challenge was an exercise of deeply exploring the initial ideas of John Locke concerning ideas and senses. In the Second Book of his *Essay Concerning Human Understanding*, Locke was trying to understand how all the contents of human minds are derived from and rest upon an external sensation of things and internal examination of the operations of our minds. Synthesizing and fantasizing around the ideas Condillac illustrated by using the metaphor of a sensing marble statue, Borges wrote:

> *"Let there be a single odor in the consciousness of the statue, and we have attention; let a fragrance last beyond the moment when the stimulus has passed, and we have memory; let one impression in the present and one from the past occupy the statue's attention, and we have comparison; let the statues perceive analogies and differences, and we have judgment; let comparison and judgment occur again, and we have reflection; let a pleasant memory be more vivid than an unpleased one, and we have imagination." (Borges 1967, p. 15)*

The idea is to adapt some lines of Condillac's metaphor in the form of a mainframe to map the system's emergences. To map this emergence is not an easy task if we consider we are in creative processes both generating and consuming "reality". It is more complex and subtle than to run a computer simulation of this complex, fuelling it with "precise" data about human Behavior, and to obtain, in the form of "data visualization", the emergences in return. We are considering 7 (seven) instances of organization and meaning – or seven storied spaces' bubbles that could be captured in the following dynamic based on emergent writing and drawing exercises:

1) Impression (emergent drawing produced immediately after the experience)
2) Attention (emergent writing produced 1 (one) hour after the experience)
3) Memory (emergent writing and drawing produced 1 (one) day after the experience)
4) Comparison (emergent writing produced 1 (one) week after the experience combined with the production of a semantic panel)
5) Judgment (emergent writing produced 1 (one) month after the experience)
6) Reflection (emergent writing produced 2 (two) months after the experience)
7) Imagination (emergent writing and drawing produced 3 (three) months after the experience)

FIG. 3: STORIED SPACES' BUBBLES

The expectation is that this "methodology-like perspective" could contribute to studying and running complex creative collective practices, re-calling the Complexity Sciences scientific concepts in a more humanized way, centering the approach on the subject by considering the diverse levels of reality we simultaneously integrate and produce, playing with the immaterial and chaotic realm of creativity. The

artistic collective practice integrated in the research process is part of the attempt of designing the methodology, an effort of integrating the self-observation to the system. The practice involves the production of a series of performative interactive video installations in a collective based creative process that is influenced by the reading of selected texts on fantastic literature and emergent writing related to consciousness processes and perception.

REFERENCES

BASKIN, K., 2008. Storied Spaces: The Human Equivalent of Complex Adaptive Systems. E:CO Issue, 10(2), pp. 1–12.

Borges, J. L., 2005. The Book of Imaginary Beings. New York: Penguin Group.

COHEN, J., 2003. Why is negentropy, like Phlogiston, a privative? In International Nonlinear Science Conference, Vienna, Austria 9 February 2003.

CONDILLAC, E. B., 1930. Treatise on the sensations. Translated from French by Geraldine Carr. Preface by Professor H. Wildon Carr. London: The Favil Press (Originally published in 1754).

DENNING, S., 2001. The Springboard: how storytelling ignites action in knowledge-era Organizations. Oxford: Butterworth Heineman.

FOUCAULT, M., 1967. Of Other Spaces. [online]. Translated from French by Jay Miskowiec. Foucault info project. Available at: http://foucault.info/documents/heteroTopia/foucault.heteroTopia.en.html

GELL-MANN, M., 1994. The Quark and the Jaguar: Adventures in the Simple and Complex. New York: Henry Holt and Company.

LIPPARD, L. ed., 1997. Six Years: The Dematerialization of the art object from 1966 to 1972… London: University of California Press, Ltd.

LISPECTOR, C., 1995. The Stream of Life. Translated from Portuguese by Elizabeth Lowe and Earl Fitz. Foreword by Hélène Cixous translated by Verena Conley. Minnesota: University of Minnesota Press.

LOCKE, J., 1972. An Essay Concerning Human Understanding, vol.1. YOLTONED, J. W., ed. London: Dent.

LUHMANN, N., 1990. Essays on Selfreference. New York: Columbia University Press.

MATURANA, H. R., 2000. The Nature of the Laws of Nature. Systems Research and Behavioral Science, 17, pp. 459–468.

RASMUSSEN, J., 2002. Textual interpretation and complexity: radical hermeneutics. In The American Educational Research Conference – AERA SIG: Chaos & Complexity, New Orleans, United States, 1–5 April 2002.

SHANNON, C. E. & Weaver W., 1949. The Mathematical Theory of Communication. Urbana: University of Illinois Press.

TSCHUMI, B., 1975. Questions of Space: The Pyramid and The Labyrinth (or The Architectural Paradox). Studio International, 190 (977), September/October 1975, pp. 137–142.

WALKER, R., 1977. A Sense of Place (Analyses od Architectures). The Crane Bag, 1(1), Art and Politics, Spring, 1977, pp. 17–28. Available at: http://www.jstor.org/stable/30060126. [accessed 10 June 2010]

Paulo Maria Rodrigues

DEPARTAMENTO DE COMUNICAÇÃO E ARTE,
UNIVERSIDADE DE AVEIRO, PORTUGAL
paulo.rodrigues@musicateatral.com

MUSICAL VARIATIONS ON THE THEME OF REALITY

THE NATURE OF REALITY IN THE ART WORLD

The idea of reality as a construction is at the essence of the work of art and artists have always been accepted as constructors of worlds. The work of scientists, in contrast, is only recently regarded in the same manner, and many scientists still find it difficult to accept that their role is not to find truth but to propose coherent explanations for reality.

Art, and music in particular, has always attempted at the development of alternative realities: worlds that would exist purely in a dimension that is not subjected to the constraints of everyday life. Even when the subject of the work of art was reality itself (sense experienced aspects of the world), the intention of the artist would be to detach it from its existence and making it acquire characteristics that would clearly make the work of art another world, another reality.

With music this is even more the case, since its development over centuries has accentuated the distinction between the soundscapes of the musical word as opposed to those of the real world. Even when these soundscapes are based on sounds of the real world (as birdsong in certain works by Janequin or Messiaen, spoken language in the work of Janaceck, trains in Villalobos and innumerous other examples) or even when recorded sounds from the natural soundscape are the actual acoustic material of the composition (either combined with musical instruments as in pieces by Reich or Respighi or as its main or only source, as in pieces by Schaffer, Cage or others) does the distinction between real world and musical work stop. Even if some authors or composers refuse to accept the legacy of Russolo or concrete music, the fact is that any sound can be used as part of the palette of materials that can effectively be used to create a musical discourse and "there is not such thing such as an *unmusical* sound-object" (Wishart, 1996).

The same applies to visual information and if we look at art in general we see that none of the major "revolutions", either the end of representation, the inclusion of daily elements in the vocabulary of the artists, the emergence of new media, the end of "framing" or others, caused a disruption in this clear distinction between the real world and the virtual/imaginary world where art lives. Even at the height of "art is life, life is art" art did not really lose its "aura", perhaps because art sanctuaries (either galleries, concert halls or Internet sites) always guaranteed the perpetuation of art in a special realm or because artists always considered art to be in essence transcendental and always ensured that it remained so. Although the work of art has its own constructed reality, artists, and performing artists in particular, frequently aim at creating a sense of authenticity and aspire at communicating and engaging in their performances as if in real reality, despite the totally fictional nature of their work. It seems a paradox but it might be within this conflict of ideas that the magical nature of live performances lies.

My artistic work comes out of a classical tradition but it is multidisciplinary, having Music as a starting point. We call it Theatrical Music. The incursion into other areas and the use of technology has allowed the creation of artistic worlds that have their coherence, even if they differ considerably between themselves and present some realities that do not make sense in the real world. Pieces such as "CyberLieder", "Bach2Cage" or "BebéPlimPlim", are universes with their own characters and characteristics and they do not challenge our perception of what is and what is not real. They clearly belong to the art world, not the real world. "CyberLieder" (Rodrigues et al, 2005) is a performance for a singer interacting with a computer through a set of controllers imbedded in the outfit of a classically trained singer. Through these controllers the singer is able to manipulate some aspects of his musical discourse as well as interact with elements of his performance that can be recorded during the act. It is truly a theatrical music event, with visual actions constituting a strong element and the distinctions between music and speech being blurred as well. Above all it is a journey, a dialogue between the real actor/singer and his memories or his virtual existence. It is not theatre nor music theatre in as far as there is not a narrative, a story to be told, just structured sounds, feelings or emotions to be expressed. It is purely abstract, totally "unreal" and yet a strong feeling of "reality" seems to be attached to it and communicated to the audience.

In "BebéPlimPlim, a performance for very young children, sung and spoken elements mingle in what seems to be a universal language or at least a communicative magma that is able to connect to the very young. Vocalizations of babies recorded during workshops, as well as elements of several soundscapes are used as part of the sound tapestry from which vocal music emerges. Abstract shapes made with inflatable elements, immersive projections (stage light being driven by the RGB content of the video, some of which react to sounds) and close skin lycra costumes complement this sound world in a performance made of unreal, unlikely elements that are capable, however, to engage the very young infants and create very strong channels of communication.

These two examples of performing projects are just a personal experience of a general principle that lies underneath the performing arts: despite our awareness of the artificiality of the situations involved, many performances seem to transport us to worlds that seem to make sense and make us believe in them. In these worlds reality is whatever we define, that gives coherence and consistence to the relationships between the agents. In doing so, a

sense of authenticity seems to emanate from the performance and we, performers and audiences, create a state of mind where the contingencies of the real world seem to be totally replaced by new rules that we temporarily accept, but would obviously deny if not entering these made up realities.

THE NATURE OF ART IN THE REAL WORLD

Music exerts a strong influence on most people. Despite this, we know much more about music itself than about how it works on the mind or the body of the individual or society. The study of music has favored the understanding of the constant evolution and increasing sophistication of ideas about how to combine sounds, or the historic facts about lives and works of composers and performers, and not so much the effect that it causes in the individual and in societies, how it shapes individual and collective consciousness. How it contributes to our perceptions about ourselves, our constructions of individual and collective realities. It is possible that the music affects us through basic mechanisms that seem to work in the mind: by evoking new emotions as well as creating associations between conscious emotions and unconscious archetypes, promoting synthesis or wholeness in the human psyche (Perlowsky, 2008).

Much of what has been investigated about the influence of music upon people has been done under the assumption that music is primarily an activity for passive enjoyment. In western societies, and in the last centuries, this is certainly the case: music is created and performed by few and consumed, passively, by many. Some of the projects I participated in were experiences in which people participated actively in the creation and performance and I became increasingly fascinated by the effect of music upon people in these circumstances.

My views about music education and music appreciation have intuitively shifted to ideas that put music making and creating at the very center of the development of rewarding, long-lasting relationships with music. These participatory projects, such as BBBB, Sonópolis or I4E, were planned for individuals and communities that have functional problems. For example, one of the editions of BBBB (Rodrigues et al 2010) was implemented in a prison for incarcerated mothers and their babies, different editions of Sonópolis involved groups such as homeless people, social housing benefiters, prisoners, while I4E was devised to allow music practice for people with special needs. All these projects have in common the fact that they deal with the potential of music to nurture affection, self-esteem and empowerment and these aim at changing the real word of the people that participate in them. Not the physical world around these people, but the perceptions about themselves and their role in the world they inhabit, therefore their "real" world. They are amongst the most powerful artistic experiences I have ever witnessed and I believe there is possibly a main reason for this: in addition to the structuring effect these projects have (which other artistic or even non-artistic projects have too) on the lives of people that lack interest, organization or self-esteem, it is very likely that music activities have a healing, well-being generating effect.

Music is known to alter moods or induce psychological states and has been used for thousands of years in therapy. It is possible that music/sound itself might have an uplifting effect on the people that participate in these projects, but I believe that the physical experience of music making, the body experienced activities such as singing, drumming, movement activities that are normally developed in these circumstances have a pivotal role in the way people relate to music, to each other and to themselves.

Vigotsky (cited in Burrows, 2004) proposed that the development of what we consider to be a purely mental process like problem solving or imagining a work of art can only develop, and are dependent on, physical processes, and emphasized the importance of discovery through doing. In group music making, all members are surrounded by a common aural environment and they are asked to respond in a manner that depends on acute understanding of what goes around.

Perception of reality is distributed between individual minds and a sense of connection is developed between people. In these instances one sees a true commitment to the performance, a sense of truthfulness that is not witnessed with many professional artists. In these cases the aesthetic appreciation of a performance seems to shift and aspects that rule our normal appreciation (such as tuning) are replaced by others impossible to define and to which we refer with words such as "truthful", "honest" or "real". Probably what we recognize in these "truthful" or "real" performances are the struggle or the fragility that we might as well recognize in top performing artists.

THE REAL WORLD IS NOT REAL; IS ART REAL?

In the world we live today we observe that the potential for narrowing the bridge between the real world and the art world is greater than ever before. This is because of technological developments but also, or mostly, because of philosophical reasons: by realizing that what we accept as reality is in fact a construction (Watzlawick, 1976), with the fall of some certainties that have ruled our lives (Pluto not being a planet, protons being smaller than first thought, the genetic code not being universal, are only some of the recent "disillusions" that contribute to the feeling of the pillars of our believes being shaken) we are entering an era where we become aware that producing works that make us experience art as we once did with reality could be an important direction for artists to explore, which implies a paradox that would make us review quite a lot of what we accept as artists. Or maybe not, it could be that art will never loose its "aura".

As a musician, above all, these ideas make me aware that after the "age of mechanical reproduction" and with the intrusion of music in practically all aspects of our daily life, music is becoming part of the information that we are given and with which we construct the realities that we end up believing in. News services that present images of disasters accompanied by music or supermarkets that play music according to the calendar are just a few examples of music entering the real world and shaping the way we perceive it. It seems like the paradigm of film is reshaping all our existence: music in films is an essential part of the way meaning and emotions are conveyed, the unaware spectator will not remember or even notice the music content of a film but it is through music that much of our sense of "real" is constructed (Cohen, 2001).

The ubiquity of music and the democratization of the access to music listening and, above all, music making and sharing is also very rapidly changing our own individual and collective potential to shape the realities around ourselves. We are not dependent, anymore, on others to make our sound worlds and there are more and more opportunities for everyone to be in charge of the way we design our own realities.

REFERENCES

BURROWS, J. B., 2004. Musical archetypes and collective consciousness: cognitive distribution and free improvisation. Critical Studies in Improvisation, Vol 1, No 1.

COHEN, A.J., 2001. Music as a source of emotion in film. In Juslin, p. & Sloboda, J. (eds.). Music and emotion (pp. 249–272). Oxford: Oxford University Press

PERLOWSKY, L. 2008. Music and consciousness. Leonardo, Vol 41, No 4, pp. 420–421

RODRIGUES, H., LEITE, A., FARIA, C., MONTEIRO, I., RODRIGUES, P. M., 2010. Music for mothers and babies living in a prison: A report on a special production of "BebéBabá". International journal of Community Music, Vol. 3, No. 1, pp. 77–90

RODRIGUES, P., GIRÃO, L.M., GEHLHAAR, R. 2005. CyberSong. Proceedings of the 2005 Internacional Conference on New Interfaces for Musical Expression, Vancouver, Canada, pp. 164–167

WATZLAWICK, p., 1976. How real is real? New York: Random House

WISHART, T. 1996. On Sonic Art. Harwood Academic Publishers,

Emily Schleiner

cordial.emily@gmail.com

divination2.0

Below is the divination2.0 Mandala, a diagram brainstormed at the start of the project: it combines terms in a way that allows the eye to follow the logic of the divination system. Starting from the outer ring, we can move through each section to the inner circle; it resembles an Astrological zodiac wheel, but is comprised of computer-related words and 2.0 concepts. The outer ring of the wheel divides the keyboard into sections. The next inner ring addresses and divides up the topic of memory, both computer and human memory. The middle ring of present-moment concerns shows a continuum of publicity, privacy, producing, and consuming. The innermost ring is derived topically from a sociological study of Web 2.0 practices.

With a metaphorical role of the dice (or tap of the key board), sections of each ring are chosen in a sequence:

FIG. 1: *divination2.0 diagram*

Manifesting as an immersive sound and visual space with motion-sensitive video projection, in April of 2010, a laptop computer was the main interface. When someone approached the computer, the video of a still Mandala would detect movement and shift to a chaotic shuffling of machine parts and then gradually become still again.

FIG. 2: *installation April 23rd, 2010*

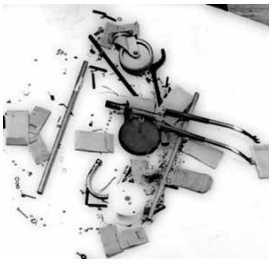


FIG. 3

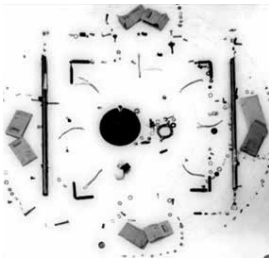


FIG. 4

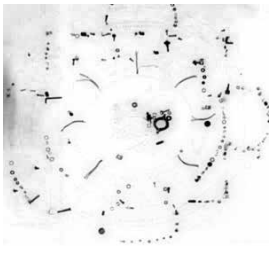


FIG. 5

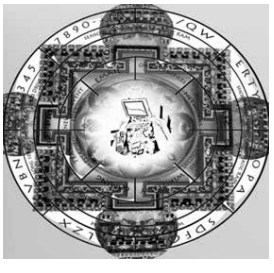


FIG. 6

After being asked to meditate for one minute, participants would type in a spontaneous username, which would then be read into Google Images and combined into a visual collage. Next, a newly created password would trigger a series of audio responses from each of the three rings, one after the other. For example, the first response would go something like this:

> *"Your long term memory can last as little as a few days or as long as decades, allowing you to permanently store data. Since your long-term memory is subject to fading in the natural forgetting process, several recalls or retrievals may be needed."*

Then,

> *"Currently, you are more concerned with issues of privacy in your web-presence."*

Then,

> *"Your practice of wikizenry (based on the word 'citizenry') will form a pool like the ocean, that you slip and fall into."*

divination2.0 opened in April of 2010 at a sound studio in Brooklyn, NY. At first discovering a secret-seeming social space from the street, after entering the space participants were able to socialize and acclimatize until making the choice to enter the installation space. They approached the computer and were asked to meditate until the camera-motion-detector indicated they had been still for a measured period of time. As the instigator of the piece, I found myself guiding users through the process, personally activating their connection to the meditative space and the computer.

Later I would hear their divided desire for an easy interface, conflicting with the enjoyment of being individually attended to by a person guiding them through the process with calming instructions.

During the next sections of the paper I will address the research that informed the project, addressing the technological context, new media art context, and dip into the various practices of divination that shaped divination2.0.

WHAT IS WEB 2.0?

Firstly, in order to understand the context divination2.0 is born from, we must have an understanding of the Web 2.0 era we are moving through as a society. From their article "Sociology and, of and in Web 2.0: Some Initial Considerations" David Beer and Roger Burrows write from a sociology standpoint. They specify three themes in Web 2.0 "… the changing relations between the production and consumption of internet content; the mainstreaming of private information posted to the public domain; and, the emergence of a new rhetoric of 'democratisation'." (2007, p. 1) These points encompass an economic shift (the merging of producers and consumers), a new access to private information, and a new ability to contribute to a public knowledge base through (for example) the use of sites like wikipedia and the practice of tagging.

Writing on an art form emerging from Web 2.0, D. Fox Harrell makes the point that amidst this cultural change, a new kind of art that reflects on the medium of the computer rises to the fore: Computational Phantasmal Art. It uses computational systems and imagery, but structures in user content to break our habitual patterns and to imbue the art with a critical awareness of culture. Beginning with an imaginary world, the interactions lead the participant into a state of critical awareness, while keeping focus on social and computational issues: "... computing to enable new imaginative possibilities and attempting to understand the cognitive origins of these possibilities are the central concerns." (Harrell 2009, p. 5) This dissolution of the divide between highbrow and lowbrow is in keeping with Beer and Burrow's description of Web 2.0 and their notion of democratisation. Here we have individual contributions built into each system. This kind of empowering engagement was something the divination2.0 project also hit on through its use of the familiar divination structure, which participants would easily reach for.

With a higher quality of user authorship, a range of improvisational interactions can be carried out by a user instead of being limited to a set of explicate possibilities. (Harrell 2009, p. 6) This combines improvisation with a computation system.

Later you will see more specifically how divination 2.0 does indeed find a home within this category; it asks participants to enter spontaneous usernames which generate an individual image-collage from the Internet. This type of artwork allows creators to determine narrative, poetic and other discourse structures while at the same time empowering users to explore and co-create. "For example, opening a door, talking to a virtual character, or performing an action could drive the generation of nostalgic memories [23], change the emotional tone of a tale [22], or cause a poem to be conveyed using a new set of metaphors and/or images [18, 24]." (Harrell 2009, p. 9) Not only do these structures give one the feeling of playing a game, they also illuminate the process at work. As John Cage famously says "Structure without life is dead. But Life without structure is invisible." (Verdier 2008, p. 1)

Another aspect of Computational Phantasmal Art that applies to divination2.0, is that boundaries between disciplines are not required. Instead, the relatively self-contained topical content of a project may more substantially inform the structure than the historical art or literary context. (Harrell 2009, p. 11) Relevant information provided within the projects makes this type of art accessible to more people. In divination2.0 for example, definitions of computer parts, Web 2.0 concerns, and practices were formed into a data-flow-diagram that looks like an Astrological Wheel or Mandala sand-painting, which became an important tool and symbol for the project.

WHAT HAS CHANGED?

The paradigm shift in technological communication during our Web 2.0 era is central, a topic of reflection in the divination 2.0 project. By acknowledging new practices of social networking etc. it invites the viewer to look more closely at how we have shifted in the past ten years as a society at large and to contextualize the project more specifically in the media arts. Here I'll try to provide some background on technology paradigm shifts.

In the year 2000, The Cyber Cultures Reader was published, a compilation of essays and articles addressing cyberculture studies, a then-burgeoning field. An influential example of an Internet dystopic movie is *The Net*: insular

computer nerd Angela Bennet (Sandra Bullock) has her identity stolen from her because she is only known online. In this instance, "identity is no longer something internal, essential, fixed, or trust-worthy" (Bell 2000, p. 4). Since 2000, the Web 2.0 revolution has tipped the balance towards user generated content. Now that personal information is casually and frequently posted to social-networking websites, the speed and amount of social and professional communications online is ever increasing, and the user-base ever expanding to mainstream culture (far surpassing the previous populations of content providers before the year 2000).

New media artists have moved beyond reveling in the exaggeratedly dystopic or utopic science-fiction-like possibilities of the information age; the new mainstream life-style of constant communication and easy-to-use online social networks for the practical communication purposes have created a new set of social norms, personal and large-scale changes. This is not the first time humans have experienced such a dramatic revolution; the industrial revolution brought about massive change as well. In his book *Rise of The Networked Society*, Castells explains: "Information technology is to this revolution what new sources of energy were to the successive industrial revolutions, from the steam engine to electricity, to fossil fuels, and even to nuclear power …" (Castells 2000, p. 30) According to him, what characterizes the current technological revolution is the utilizing of user-provided knowledge on devices in a "cumulative feedback loop" into innovation. (Castells 2000, p. 31) With respect to Web 2.0 human characteristics he says:

> *"There is […] a close relationship between the social processes of creating and manipulating symbols (the culture of society) and the capacity to produce and distribute goods and services (the productive forces)."*

Not only is the user's sociability and knowledgeability increased, but also the ease and reliance on computers is increased, enjoyed, and made unconscious as people caress their portable devices and outsource their memories to harddrives. Because changes in habit become normalized during a paradigm shift we act with comfort and a sense of practicality. There is no inherent worth placed on the recent paradigm shift during a participant's experience of the divination2.0 project, however, the piece does create space and time for contemplation, breaking our immersion and sense of normalcy within Web 2.0. Suddenly these points of focus appear alien but in this sustained meditative environment, the alien perspective is neither threatening nor exciting.

SPIRITUALITY AND NEW MEDIA

Rather than attempting to bring mysticism or spirituality "up to speed" technologically, divination2.0 utilizes a divination structure as a process of meaning-making. It doesn't presume anything supernatural, but instead relies on what participants bring to their experience, much like a Rorschack test. The meditative component of the experience is intended to provide an alternative, distanced, and yet immersed view of the content.

There is, however, a history of viewing – in a general way – media as otherworldly in its capacity to preserve words, sound, and imagery of the dead:

> *"There is always a mixture between human interpretation of meaning, and the limited symbolic ways that machines encode meaning. This balance between computationally manipulable structure and ghostly, subjective human meaning is at the heart of the expressive potential of computing." (Harrell 2009, p. 6)*

Writing, considered the first medium, is a medium of fragments of history that are recorded and survive only in small segments. Kittler makes the point that historically, what is ultimately archived is viewed with reverence since traditionally only religious writings have survived. (1999 p. 8) Not only does this contextually imbue the media with historical/religious significance, but also writing leaves a timeless record of individuality creating a ghostly imprint of a past moment, as well as inviting the reader to use their imagination to interpret, and hallucinate. "Once memories and dreams, the dead and ghosts, become technically reproducible, readers and writers no longer need the powers of hallucination. Our realm of the dead has withdrawn from the books in which it resided for so long." He goes on to talk about Balzac's fear of photography because of its ability to capture precisely, mechanically, creating specters. "The realm of the dead is as extensive as the storage and transmission capabilities of a given culture" says Kittler. (1999 p. 13) According to Kittler, media – all media – carries with it an invitation into otherworldliness. divination2.0 does not address this directly but has a layered relationship with the mystification of technology.

New media also has an ability to facilitate instantaneous "unnatural-seeming" communications. divination2.0 actually attempts to demystify computers. Descriptions of computer memory merged with human memory are thought-provoking and yet do not intentionally imbue computers with mystery. However, since many have a reverential awe of media and technology, this mystique remains unintentionally present, an element to be reconsidered in divination2.0's next iteration

Numerology, Astrology, and the practice of Tarot reading, on the other hand, ask that participants meditate and treat a game of chance with reverence; this attitude and behavior elicits a feeling of connectedness through an experience of subjectively interpreted visuals and instructions.

CONCLUSION AND DESCRIPTION

Since divination2.0 uses the vernacular of computers and online culture, it brings our contemporary mode of relating to each other into another realm – and yet is a divination game. The Web 2.0 world has changed and continues to change human behavior fundamentally, giving us both a constant feeling of connectedness as well as a new sensation of isolation because we are disembodied as we experience the Internet. On a superficial level, divination practices and phantasmal media both incite a feeling of connection. This distancingly mediated and yet lightning speed connection could be perceived as a distinct type of connection than can be layered on top of a traditional divination experience.

divination2.0 dives into that conundrum, bringing these elements into a realm of reflection. As humans adjust to new devices and habits, they are changing their sensitivities and sense of time with respect to each other. This change waits for time to contextualize and assign meaning – and yet the project itself asks for time to be spent with it. In this space users may have an opportunity to explore and interpret their experiences in a protected moment where sociability, subjectivity, and machinery may become conscious thoughts.

REFERENCES

ASHLEY, L (2005). The Complete Book of Numerology. New Jersey: Barricade Books.

BEER, D & BURROWS, R (2007) Sociology and, of and in Web 2.0: Some Initial Considerations. Sociology and, of and in Web 2.0: Some Initial Considerations. 12 (5)

BELL, D & KENNEDY, B (2000) The Cyberculters Reader. London and New York: Routledge, Taylor & Francis Group.

BUNNING, J (1998). Learning the Tarot: A Tarot Book for Beginners. San Francisco: Red Wheel / Weiser LLC.

CASTELLS, M (2000). Rise of The Networked Society. 2nd ed. Oxford: Blackwell Publishers Ltd.

HARRELL, D. Fox (2009) Toward a Theory of Phantasmal Media: An Imaginative Cognition and Computation-Based Approach to Digital Media. Resetting Theory, Ctheory.net. (2)

KITTLER, F (1999). Gramophone, Film, Typewriter. Stanford: Stanford University Press.

"Awake Are Only the Spirits" – On Ghosts and Their Media (2009) We Make Money Not Art, Available: http://we-make-money-not-art.com/archives/2009/09/awake-are-only-the-spirits-on.php Last accessed: November 15, 2009

How does Astrology Work? Astrology on the Web, Available: http://www.astrologycom.com/astrol3.html Last accessed: December 2, 2009

VERDIER, E (2008) Modest Magic Forces. Indeterminacy. Art Press. (363)

Ellen Sebring

PHD CANDIDATE, CAiiA, UNIVERSITY OF PLYMOUTH, UK
RESEARCH ASSOCIATE, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MA
CREATIVE DIRECTOR, VISUALIZING CULTURES, MIT
http://visualizingcultures.mit.edu
http://ellensebring.com
sebring@mit.edu

FROM OPIUM TO BOXERS: SIGHT-LINES IN VISUAL HISTORY

It is not unusual for historians to trace the tensions that fueled the mid-19th-century Opium Wars in China to the domination by foreign powers that was the result of the brief, but far-reaching Boxer Uprising of 1900. The unfolding of these events in China, however, can be seen from a new vantage point with uncharted results. "Image-driven scholarship" is a developing research paradigm based in the digital environment that uses images from the historical record as the primary source material for social/cultural historical inquiry. In a field that traditionally relies on texts for both research and publication, images typically add color and texture as mere illustrations. What happens, then, when images become the primary component of research?

An image-based research process begins with search and collection, continues with the identification of unique visual "fingerprints" for events, and grows in complexity and depth as connections and visual threads between events are revealed. The methodology of digital image-driven scholarship is evolving. A pitch-and-catch between original media, digital versions, and print-outs offers a layered, kaleidoscopic view with differing qualities of information and increased malleability as historical events are put under the lens.

The initial step – data collection – often begins with an online image search. As opposed to plunging into one of the many carefully researched and nuanced books on the subject of the Anglo-Chinese opium wars, an image-based research path simply asks what is out there and is answered with unedited search results that immediately broker chaos. Images are often not identified, misidentified, or irrelevant. A search on the opium wars can jump through space and time, juxtaposing explosive gunfire from the first iron steamship *Nemesis* next to sleek cigarette boats engaged in today's war on drugs (nonetheless interesting to contemplate for theories on the drug trade then or now). With texts, a linear path laid out by an author creates a receptive, orderly and passive mode of inquiry in the reader. Image-based search results, however, trigger an active, multi-linear mode of inquiry in which knowledge must be sought to bring meaning to chaos.

Historical images operate, in a sense, like "time" bombs, exploding through the past into the present with bits of information shooting in all directions. The bomb analogy is not so far-fetched in its more painful aspect when it comes to the unfiltered historical attitudes that appear in "living" color, as satirical cartoons, propaganda images, news from the front, and so forth. Such images – often bloody, grotesque or deeply denigrating to the "other" – actually convey a complexity of racist, nationalistic, and war-driven attitudes, but have an impact that is simple and immediate, making them difficult to view. Asking viewers to slow down, look carefully, read and understand more fully while retaining the emotional component is one of the most powerful yet difficult aspects of image-driven scholarship.

Regarding the publication aspect of image-driven scholarship, one opportunity among many in the future is to re-envision the display format to regain a semblance of the aura of the original object, thus restore the situational qualities of an image's position within a print, scroll, illustrated gazette, photograph album, postcard, etc., while retaining the fluidity, communications, interactivity, and expansiveness of digital space. The tactile element is another quality lost in translation to the digital format.

The Opium Wars as a case study illuminates an unexpected node of image-driven scholarship: the emergence of a unique visual "fingerprint" for each historical event. The Opium or Anglo-Chinese Wars refers to two wars separated by fourteen years (1839–1842 and 1856–1860). The collection process culled images from both wars, but gradually each war became visually distinct, in the same way music can be recognized by qualities of different periods. Can historical themes be attached to the macro view of each visualized war? It is possible, for example, to observe that in the span of fourteen years technology changed dramatically. A florid, romantic styling with its editorial graces gave way to the blurry harshness of black-and-white photographs. Though image-production is only one component of historical research, it may be possible to extrapolate similar changes in society, military might, and politics.

In addition to "reading" the visual fingerprint, individual images can be pursued thematically through time. For example, the theme of missionaries emerges in the first Opium War with the gifted linguist and missionary, Karl Gützlaff, whose image appears frequently before, during, and after the war as he was one of the few Westerners who understood Chinese dialects and could assist in negotiations. Employed as translator by the British East India Company on journeys to sell opium in coastal villages, Gützlaff simultaneously handed out bibles. In the second Opium War, images of torture appeared in French newspapers of Father August Chapdelaine, executed by the Chinese for preaching illegally, an event that triggered France's entry into the war. Some forty years later the missionary theme was paramount in the Boxer Uprising, during which missions in northern China were attacked by peasant rebels in an anti-foreign/anti-Christian movement.

As additional visual themes thread events together, a unique historical picture emerges. While text is indispensable for depth, detail and clarity, the visualization of events through images of the time – and importantly, addressing

the absence of images, considering what isn't seen and what is missing from the visual record – images as source offer a deeply personal, yet cyclically patterned representation of the past.

FIG. 1-2: *A loose representation of visual "fingerprints" of the 1st Opium War (1839–1842), top, & 2nd Opium War (1856–1860), bottom, compiled by Ellen Sebring*

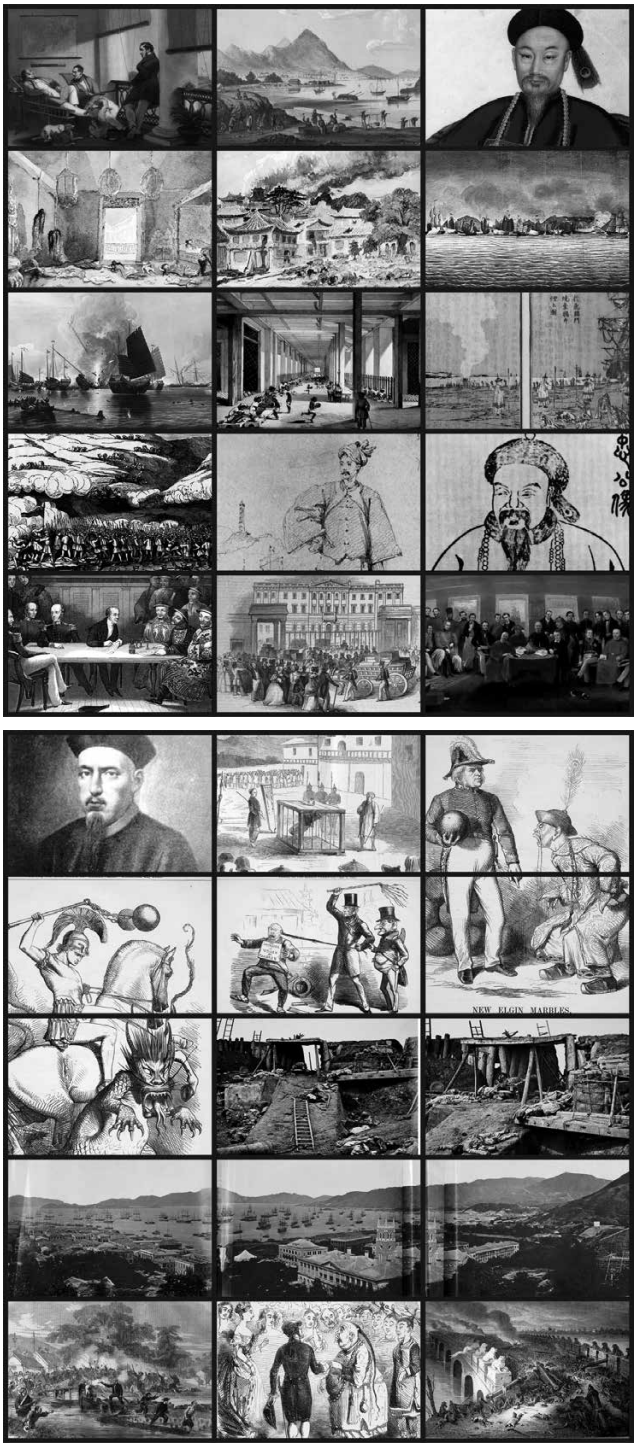


FIG. 1-2

Paul Sermon

p.sermon@salford.ac.uk

Charlotte Gould

c.e.gould@salford.ac.uk

THE CREATIVE TECHNOLOGY & COMMUNICATIONS RESEARCH CENTRE, UNIVERSITY OF SALFORD, UK

LIBERATE YOUR AVATAR; *The Revolution will be social networked*

1. NEW FORMS OF SOCIAL NARRATIVE

Through the increasing importance of user generated content via public networks in both online and offline contexts the contemporary media art discourse now finds itself in an ever increasing socially networked environment. Charlotte Gould and Paul Sermon make both the participants/performers and the artists/directors more susceptible to new forms of social narrative. The authors' artistic projects deal with the ironies and stereotypes in multi-user virtual environments such as cultural identity, gender roles, digital consumption and virtual desire. Their work aims to specifically utilise alternative interactive functionality and techniques in multi-user virtual environments that allow the participants to embody performer roles to interact and direct new social networked creative narratives by their communication, presence and movements.

2. PAUL SERMON'S TELEMATIC PRACTICE

Paul Sermon's work of the early 1990s explores the emergence of user-determined narrative by bringing remote participants together in a shared telepresent environment. Through the use of live chroma-keying and videoconferencing technology, two public rooms or installations and their audiences are joined in a virtual duplicate that turns into a mutual space of activity. The audiences form an integral part within these telematic experiments, which simply wouldn't function without their presence and participation. As artistic creator, Paul Sermon is then designer of the environment and, consequently, "director" of the narrative, which is determined through the social and political milieu that he chooses to play out in the telepresent encounter.

Paul Sermon's more recent creative practice looks specifically at the concepts of presence and performance within Second Life and what the authors call "first life", and attempts to bridge these two spaces through mixed reality techniques and interfaces. The work further examines the notion of telepresence in Second Life and first life spaces through a blurring between "online" and "offline" identities, and the signifiers and conditions that make us feel present in this world. This artistic practice questions how subjectivity is articulated in relation to embodiment and disembodiment. It explores the avatar in relation to its activating first life agent, focusing on the avatar's multiple identifications, such as gender roles, human/animal hybrids, and other archetypes, identifiable through visible codes and body forms in Second Life.

While there is a shift of emphasis from Sermon's previous telematic projects here, there are significant parallels between the earlier networked video experiments and the presence and absence experiments he is developing in Second Life. Together these aspects of telepresence and the merger of first and second life aim to question fundamental assumptions of the Second Life phenomenon.

3. CHARLOTTE GOULD'S NARRATIVE PRACTICE IN SECOND LIFE

Since 2007 Charlotte Gould has developed a number of site-specific works using Second Life, which enter into a discourse on the identity politics of online virtual environment aesthetics. These works seek to question the trend in visualisations of environments and avatars that incontrovertibly conform to the conventions of ultra-realism and "super-humanism" in multi-user virtual environments, looking for an unconventional aesthetical paradigm counter to the stereotypes that prevail in Second Life. In 1995 Sherry Turkle argued that the experience of inhabiting a virtual world can be liberating, as the user is unbound from the shackles of their own body, gender or image and can be whoever they choose (Turkle 1995).

While the majority of users appear to be journeying through the "uncanny-valley" (See Mori 1970) on a quest for super-human aesthetics, and the buildings and landscapes they create similarly strive to replicate our first life environment, there is an implicit irony when we build virtual roads we do not use because we can fly or even teleport, and fit roofs and windows in a landscape where it never rains. Moreover, this landscape is not so dissimilar from our current first life hyper-reality that Umberto Eco described in the mid 1980s as a culture obsessed with fabricating environments and experiences in an effort to create a space that is better than real (Eco 1986) – think of Venice Las Vegas, urban beaches or the proliferation of celebrity plastic surgery, and the discourses of first and second life become increasingly blurred. In her current practice-based research, Charlotte Gould produces work that responds to and enhances a first life experience through a counter-culture landscape in Second Life, relying on alternative hand drawn textures and low-tech handmade objects such as props, costumes and body parts.

FIG. 1: MOTION TRACKING MOVEMENT OF AVATAR, CHARLOTTE GOULD ISEA AUGUST 2009

Charlotte Gould uses everyday practices to inform further research (See de Certeau 1980). The creative opportunities that digital and pervasive media offer for the public to actively engage and contribute content extends beyond the notion of the "user-generated". As Matt Adams from Blast Theory argues, instead we should talk about public created content, where accessibility of new technologies opens up the potential for new creative content, as Barthes concludes the public completes the work through the creation of their unique narrative (Barthes 1968).

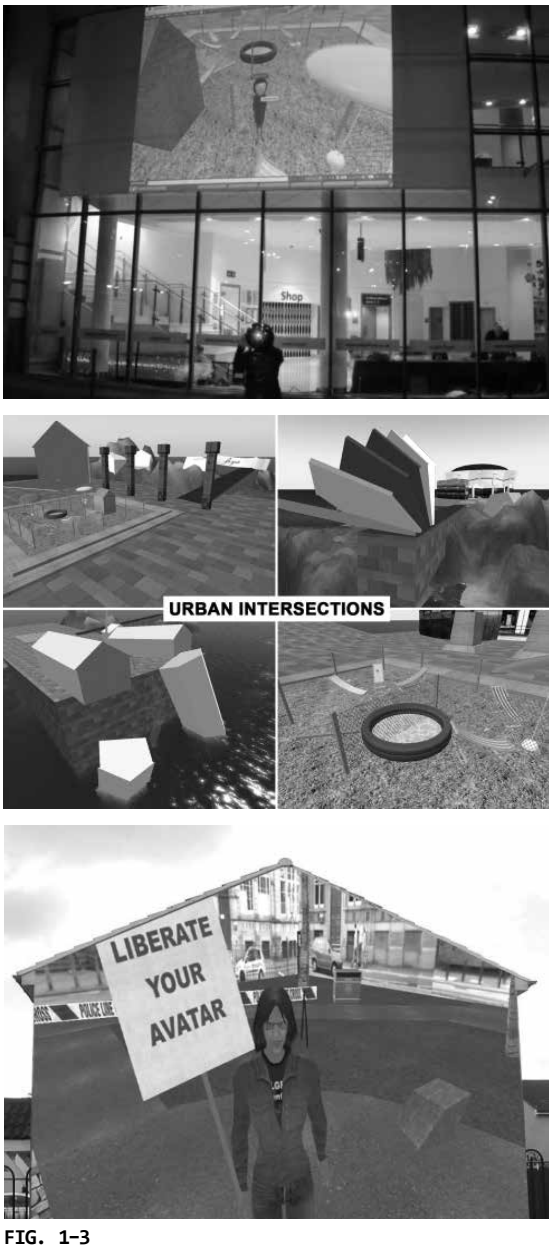


FIG. 1–3

4. THE UNDERPINNING CONCEPTS OF THE AUTHORS' COLLABORATIVE PRACTICE

The aim of the authors' current collaborative practice is to critically investigate how online participants in three-dimensional worlds, Second Life in particular, socially interact within innovative creative environments, appropriate these cultural experiences as part of their everyday lives, and question what is "real" in this relationship. The collaborative practice brings together ethnographic and creative practice-based methods that identify and develop original, innovative interactive applications, interface design and necessary cultural and sociological knowledge. Each of these will help shape and define the emerging online "metaverse" (See Stephenson, N. 1992) society, significantly contributing to the quality of both first and second life.

So as to explore this emerging relationship between first and second life, Paul Sermon and Charlotte Gould have developed interfaces that focus on the interaction and exchange between online and offline identities through social practices, such as performance, narrative, embodiment, activism, place and identity construction. Their collaborative experiments seek to question whether Second Life is a platform for potential social and cultural change – appropriated as a mirror image of first life. By consciously deciding to refer to this image that is mirrored as "first" life rather than "real" life, the authors' central question poses a paradox in Second Life when we consider Jacques Lacan's proposition that the "self" (or ego) is a formulation of our own body image reflected in the "mirror stage" (Lacan 1949). However, there is no "mirror stage" in Second Life. This would suggest that the computer screen itself is the very mirror we are looking for, one that allows the user to formulate her/his "second self".

In Second Life you create an avatar that lives out an online existence. There are no set objectives, you can buy property, clothing, accessories, furnish your home, modify your identity, and interact with other users. Consequently, while the virtual shopping malls, nightclubs, bars and beaches often reach their user capacity, there is a noticeable lack of creative and sociological modes of attraction.

However, when the *Front National*, the far right French political party of Jean-Marie Le Pen opened their Second Life headquarters in January 2007, the Second Life residents reacted in a way that would suggest they are far from complacent avatars wandering around a virtual landscape, and that they possess a far greater degree of social conscience than the consumerist aesthetics of Second Life suggest. Through prolonged mass virtual protest the centre was razed to the ground in the space of a week and has not returned since. The reaction to the Le Pen Second Life office suggests that Second Life is indeed a platform for potential social and cultural change. And there is a hidden desire and ambition to interact and engage with this online community at an intellectual and creative level that transcends the collective "I shop therefore I am" (See Kruger 1987) apparentness of its community. Moreover, Second Life could then influence our first lives. As the landmass and population of Second Life expands at an ever-increasing rate it is clear that essential research into the intersection and interplay between first and Second Life, and both new and old patterns of consumption, cultural production and sociability is urgently needed.

5. CROSSING THE SOCIAL DIVIDE THROUGH COLLABORATIVE CREATIVE PRACTICE

These research activities and outcomes have now come together within a collaborative site-specific public installation entitled *Urban Intersections* focused on contested virtual spaces that mirror the social and political history of Belfast as a divided city, and presented at ISEA09 (International Symposium of Electronic Arts 2009). This collaborative project specifically reflected on the ironies of contested spaces, and stereotypes in multi-user virtual environments, exposing an absurd online world that consists of perimeter fences, public surveillance, and national identity. These futile efforts to divide and deny movement and social interaction were an uncanny reflection of the first life urban and social landscape of Belfast. So whilst it is possible to

defy and transcend these restrictions in Second Life where we can fly, teleport and communicate without political constraint and national identity, we can question the need for such social and political boundaries enforced in first life and consider the opportunity to initiate social change in first life through our Second Life experience.

FIG. 2: URBAN INTERSECTIONS SERMON & GOULD AT ISEA BELFAST AUGUST 2009

The installation was located on the regenerated landscape of the Waterfront Plaza Belfast, directly outside the newly developed concert hall building. This utilitarian environment was used as a stage set to represent an augmented garden that explored the concept of boundaries and territories, a virtual plaza encapsulated by the ironies, contradictions and obscurities of a divided city, and a metaphor of Belfast's social history. As the participants walked through this urban landscape, both first and second life inhabitants came "face-to-face" on screen, in the form of a live digital mural projected on the façade of the Waterfront building. This mural formed the central focus of the installation and immediately spoke of the infamous painted murals on houses across West Belfast, as though the project itself were projected onto the gable end wall of a house on the Falls Road or the Shankill Estate.

FIG. 3: PROPOSED SECOND LIFE PROJECTION FOR ISEA BELFAST 2009

The local audience formed an integral part of this installation that relied on user interaction and aimed to transcend boundaries through user-generated storytelling and memory building in a post-conflict society. The complete installation utilised three interface techniques. Charlotte Gould's motion tracking interface allowed visitors in Belfast to wear a large puppet-like copy of her unique avatar head. Covered in an array of LED lights that were tracked, participants could then control the movements of the Second Life avatar as a means of alternative navigation through a maze of chain-link garden fences. Paul Sermon's interface combined first life visitors and Second Life avatars within the same live video stream. By constructing a blue chroma-key studio in Second Life it was possible to mix live video images of online avatars with the audience in Belfast, enabling these participants to play and converse on a collaborative video stream simultaneously displayed in both first and second life situations. The third interface was developed by sound and media artist Peter Appleton, whose contribution included a barbecue on the Waterfront plaza that simultaneously controlled the conditions of an identical Second Life barbecue. Through a series of light and heat sensors it was possible to relay commands to the online situation, so that when the first life barbecue was lit so too was the Second Life barbecue and as food started to cook and brown so did its online duplicate. All these interfaces referred to the domestic garden and the infamous Belfast perimeter fences. The aim was to break down these boundaries through social interaction that prevailed, be it through a video portal, a didactic maze or over a grilled sausage.

6. PUBLICLY ACCESSIBLE SOCIAL NETWORKING ON AN URBAN SCALE

The collaborative work of Sermon and Gould will continue to explore the wider social consequence of multi-user

FIG. 5: *Barbecue in first life controlling Second Life barbecue, Peter Appleton ISEA09 Belfast, August 2009*

virtual environments, be that on Second Life or the platform that supersedes it. Whichever is the case, it is essential that multi-user virtual environments such as Second Life move away from the imbedded linden dollar economy that intrinsically defines its capitalist principles and growth. The *Urban Intersections* project has already contributed to this paradigm shift by alternatively locating itself on an OpenSim, currently available as a derivative open-source beta version of Second Life that locates its island sims on geographically distributed servers. Following a similar model to the WWW, this fundamental network architecture shift moves away from the centralised San Francisco Linden Lab monopoly to an open source networked model, and is in many ways reminiscent of the VRML architecture of the mid 1990s and its collective ideology. This distributed content and ownership will inevitably lead to social growth, cohesion and public empowerment, and like all social networking platforms, contribute to greater social and political change.

7. REFERENCES

BARTHES, Roland. 1993 (first published 1977). Image-Music-Text: The Death of the Author. Fontana Press

BAUDRILLARD, Jean. (Glaser, Sheila F. – Translator). 1995 (first published 1981). Simulacra and Simulation (The Body, In Theory: Histories of Cultural Materialism). University of Michigan Press

de Certeau, Michel. 2002 (first published 1980). The Practice of Everyday Life. University of California Press

ECO, Umberto. 1986. Travels In Hyperreality. Pan Books Ltd.

Barbara Kruger, a prominent American artist, coined the term "I shop therefore I am" in 1987, as a pun on consumerism and René Descartes' statement "I think therefore I am."

LACAN, Jacques. 2007 (first published 1966). Ecrits: The First Complete Edition in English. W. W. Norton

MORI, Masahiro.1970. Bukimi no tani (the uncanny valley) Energy, 7, 33-35. (In Japanese)

DE SAUSSURE, Ferdinand. (Harris, Roy). 1998 (first published 1964). Course in General Linguistics. Open Court Classics

STEPHENSON, Neil. 2000 (first published 1992). Snow Crash. Spectra Paperback

TURKLE Sherry. 1995. Life on the Screen: Identity in the Age of the Internet. Simon & Schuster

Diana Reed Slattery

NOVELIST, PSYCHONAUT, AND VIDEO PERFORMANCE ARTIST
USA

ECSTATIC SIGNIFICATIONS: *Psychedelics, Language, and Realities*

"'It is not I who speak,' said Heraclitus, 'it is the logos.' Language is an ecstatic activity of signification. Intoxicated by the mushrooms, the fluency, the ease, the aptness of expression one becomes capable of are such that one is astounded by the words that issue forth from the contact of the intention of articulation with the matter of experience." (Munn 1973)

REALITY REVIEWED

"If you like the experience of having your whole ontological structure disappear out from under you, you'll probably love psychedelics." (McKenna 1992))

To argue for what Reality is or isn't, when reality is that standard by which we decide what is and isn't, is a slippery proposition, as circular and self-referential as consciousness it/self.

From the experiential perspective, the technoetic practice from which this thesis derives its data, determinations of *what is real* and *what is reality* are unavoidably value-driven, and result in value-laden statements; these values then frame subsequent arguments in which the terms are used.

First, the relative value one assigns internal (mental, subjective, personal) states and external (physical, objective, impersonal) states is indicative of the investigator's interest in those states, which become what one engages and studies. The "taboo of subjectivity" (Wallace 2000), refers to the position which believes in and values a transparent and value-free objectivity in which hypotheses can be independently verified or falsified (the truth value) above that of subjectivity. Forms or states of consciousness (the *experiential*) which do not deliver verifiable experiences (which can be tested by repeatable experimental results) are not considered reliable methods of attaining truth, even a provisional truth.

This point is made by Dave Boothroyd as well in his discussion of Henri Michaux, deconstruction, and drugs:

"… for Michaux, the loosening of control over thinking's grip on 'reality' which the drug (mescaline in this case) facilitates, engenders, most interestingly, an experience with language. From his perspective, this exposes how what is soberly regarded as the grip on reality can also be seen as the grip of normality." (Boothroyd 2006)

One key attribute defining the epistemological gap is the conception of reality as singular or multiple. To posit that reality is something that can be modeled and experienced in multiple ways is to undermine the ground – a singular reality, uniform among scientific observers – upon which scientific observation, experimentation, and verification takes place.

TRANSDISCIPLINARY AND MULTIPLE REALITIES

Basarab Nicolescu is a Roumanian theoretical physicist and a scholar of the mystic Jacob Boehme (1991). His formulation of transdisciplinarity is an attempt to provide a theoretical framework from which to integrate knowledge from several levels of reality.

The ontological status of experience in the psychedelic sphere is called into question at every turn: was that perception (of the interconnectedness of all of nature, self included; of a sea of giant fluorescent violet snakes) real? If so, in what sense? "Reality" and "level of Reality" as Nicolescu defines them are useful for the discussion of reality in the psychedelic sphere.

"Here the meaning we give to the word reality is pragmatic and ontological at the same time. By "Reality" (with a capital R) we intend first of all to designate that which resists our experiences, representations, descriptions, images, or mathematical formulations." (Nicolescu 2002)

For Nicolescu,

"The Godelian structure of Nature and knowledge guarantees the permanent presence of the unknown, the unexpected, and the unpredictable […] The opening of transdisciplinarity implies, by its very nature, the rejection of all dogma, all ideology, all closed systems of thought. This opening is the sign of the birth of a new type of thought turned not so much toward answers as questions. The Subject is himself the unfathomable question that assures the permanence of questioning." (Nicolescu 2002)

Roy Ascott brings the discourse of psychoactive plants and shamanic experience into the domain of art, in his discussion of the three VR's. Validated Reality, "our daily experience", is familiar to us all. It is the orthodox universe of causal "common sense", the way we are taught at school to view the world, a consensual reality established early in our lives by the constant repetition of its axioms. Virtual Reality describes the realm of telematic and immersive, interactive art and digital technology. Vegetal Reality "can be

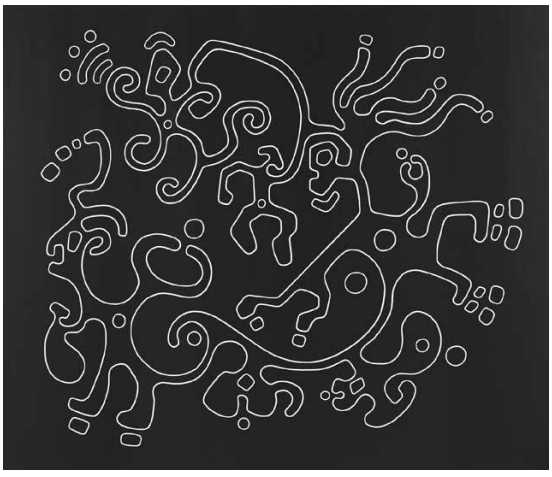


FIG. 1: *Jason Tucker, "Actual Contact"*

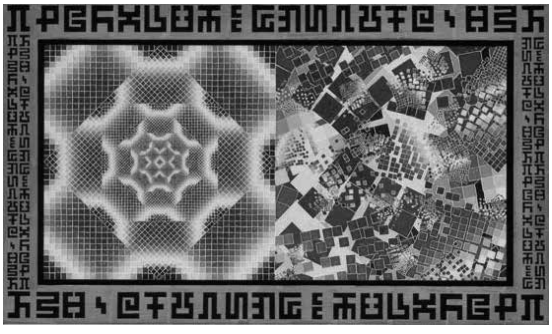


FIG. 2: *Allyson Grey, "Jewel Net of Indra," 40" x 40," 1988*

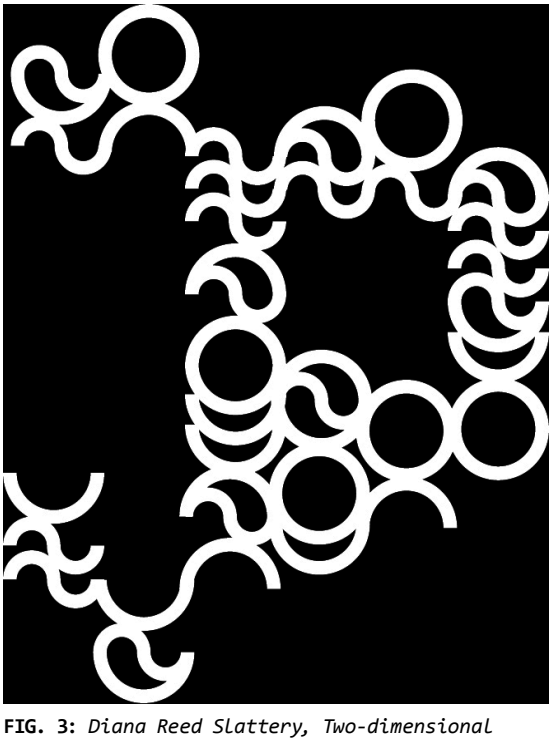


FIG. 3: *Diana Reed Slattery, Two-dimensional Glide maze*

understood in the context of technoetics, as the transformation of consciousness by plant technology." (Ascott 2003).

THE OTHER

The question of the Other is the question of how we experience, then frame and interpret the phenomena of the felt/perceived presence of an Other or others in altered states of consciousness (ASC). The Other appears in the psychedelic sphere in a plethora of forms, among them plant teachers such as *Ayahuasca* and magic mushrooms (de Rios 1984; Wasson, Kramrisch et al 1986; McKenna and McKenna 1993a; McKenna 1993b; Narby 1999; Doyle 2010); alien contact (Leary 1973; Lilly 1979; McKenna and McKenna 1993a; McKenna 1993b); the shaman's spirit guides and animal and plant allies; angels and demons; and felt presences. Often this dialogue with the Other is concerned directly with teaching, and the acquisition and transmission of knowledge. Cognitive psychologist Benny Shanon asks, "What does it mean that a plant conveys knowledge? What is the status of the knowledge that is presumably achievable through the consumption of psychoactive plants?" (Shanon 2002). Shanon connects this quest for knowledge in the psychedelic sphere with the mythical search for the Tree of Knowledge, as does McKenna (1992b).

XENOLINGUISTICS

> *"The thing makes linguistic objects it sheds syntactical objectification so they come toward you they divide they merge they're bounding they're screaming they're squeaking they hold out objects which they sing into existence or which they pull out of some other place and these things are like jewels and lights but also like consommé and old farts and yesterday and high speed …" (McKenna 1998)*

Xenolinguistics, a term borrowed from science fiction, denotes the study of non-human or alien languages: the linguistic forms of the Other in ASC. Xenolinguistics embeds the assumption that language is a much broader concept than natural language. For all its affordances, diversity, and fecundity in creating all of Culture, including its own powerful offspring, the formalisms of mathematics, logic and the binary codes that reflexively manipulate these forms, *natural* language emerges from an organism, homo sapiens, who is linguistically structured, who is *in-formed*, as Francisco Varela uses the term, all the way down. So it is with all due respect to the mother tongue of humanity, that I include under the rubric *language* some examples of linguistic phenomena manifesting in psychedelic states as most *unnatural*.

The observation, description, and interpretation of linguistic phenomena in the psychedelic sphere takes place on shifting sand. The psychedelic states, through chemical action on our neurotransmitter systems, disrupt the functioning of the natural language symbolic system; destabilize the experience of self (the *who is observing?* and *who are those Others?*), and transfigure the perceptual milieu (the *what was* that? and hence the assignment of reality), sometimes to a spectacularly alien degree. Natural language cannot by definition address the unspeakable, but the Unspeakable (which Terence McKenna sometimes

conflates with the Other) can address us as linguistic creatures – on its own terms, at its own behest, with its own timing, and utilizing its own symbolic systems.

THE XENOLINGUISTS

A brief description follows of the work of four xenolinguists: Jason Tucker and the art form he has called Actual Contact; Allyson Grey and Secret Writing; Terence McKenna and Timewave Zero; and my own work with the Glide symbolic system.

JASON TUCKER

Jason Tucker's drawings combine the physical act of drawing and painting with digital scanning, followed by a rendering of the raster image into vector shapes. He describes the drawing process as "not consciously creative," or "automatic," and as "fluid movement in a state of transformation." The movement is experienced as a collaborative process with the Other. **(FIG. 1)**

> *"Archetypes of the Other are present in the work; and the act of drawing the image itself is described as being in participation with an Other. Cellular ancestral-like patterns merge with alien-like imagery (and/or our future selves) and interact in a complex social network; a composite psyche made up of many entities." (Tucker 2008)*

A progression of events related to psychedelic sessions precipitated Tucker's immersion in drawing "cellular entities."

> *"Then there was one in particular that came out during a Psilocybin mushroom trip where a 'full on' cellular entity was holding one of my earlier style drawings. This seemed to evoke that there was someone else in my psychic presence. And more came pouring out – some looking a little wavy in a peculiar way, kinda like they belonged to someone in the psychiatric ward. In hindsight I was in a very fragile state at the time. I can remember communicating with them as if I had made contact with something completely alien. It was religious in nature. Often I would get the sensation that I was participating with someone on the other side of the image who was drawing the same thing at the same time. A mirror effect." (Tucker 2010)*

ALLYSON GREY

Infinite connectivity and reflectivity is at the heart of Allyson Grey's psychedelically informed artwork. She relates the sacred loom-matrix to the Net of Indra, a Hindu symbol expressing the concept of a condition where every entity in the universe connects with and has knowledge of every other: infinite noesis. Secret Writing symbolizes, for Grey, "all communication and creativity – the unutterable truth beyond language that is pointed to by sacred text." **(FIG. 2)**

> *"I started painting spectral squares in the late 70's after an acid trip I shared with Alex, which pointed us both in the direction of portraying the multicolored strands of light energy that formed a vista of interconnected fountains and drains, flowing in a pattern that spread to infinity in all directions. This experience lifted the veil over the loom-matrix of our highest identity, of being a node in the net of space and time. This was clearly the most profound revelation of our existence, and was to become the subject of our art for a lifetime." (Grey 2010)*

TERENCE MCKENNA

Terence McKenna's complex of psychedelic ideas can be mapped with language at the center, influencing every discourse he entered, and there were many: hermeticism, alchemy, the Logos, DMT, DNA, I Ching, shamanism, ecology, and ontology – where the linguistic structure of reality it/self is asserted. Early in his psychedelic adventures, a profoundly influential experience with DMT seems to have set this strange attractor in place in his personal landscape. He has called this experience, and the DMT experience in general, "the core mystery." In Nepal studying Tibetan language in 1967, aged 21, Terence McKenna had

> *"[…] found myself in the sort of auric equivalent of the Pope's private chapel, and there were insect elf machines proffering strange little tablets with strange writing on them. And it all went on, they were speaking in some kind of – there were these self-transforming machine-elf creatures – were speaking in some kind of colored language which condensed into rotating machines that were like Faberge eggs, but crafted out of luminescent super-conducting ceramics, and liquid crystal gels, and all this stuff was so weird, and so alien, and so 'un-English-able' that it was a complete shock."*

> *"These are the wholly alien linguistic objects he describes over and over in his taped lectures and books from the beginning to the end of his career. He became a xenolinguist in the DMT space; much of his linguistic theory is a result of the effort to unpack the 1967 (and subsequent) DMT experiences." (McKenna 1983)*

DIANA REED SLATTERY

The Glide project spirals around a central theme of the mutual evolution of language, game, and consciousness, describing and modeling one possibility for an evolutionary writing system, Glide. The 27 signs of the Glide language, originally a gestural language, are inscribed both as static glyphs and morphing forms. The mutable medium of the computer opened the possibility of dynamic inscription of linguistic signs for exploration. Just as Glide expresses itself through multiple media – the gesturing body, the constantly rewritten body of languages we call the computer, and on that most mutable of media, the mind – so the Glide project communicates these ideas in multiple voices: through the narrative of a novel; using interactive software for exploring Glide; creating animations; through theoretical writing and game design; through psychedelic session reports documenting the exploration of Glide in ASC; and in performance including visual, musical, spoken, and interactive components. Together, these multiple viewing-points produce a labyrinth of interconnected and interflowing meanings mirroring the networks of linked Glide glyphs called mazes.

REFERENCES

ASCOTT, R. (2003). Telematic Embrace: Visionary Theories of Art, Technology, and Consciousness. Berkeley, University of California Press.

BOOTHROYD, D. (2006). Culture on Drugs: Narco-cultural studies of high modernity. Manchester, Manchester University Press.

GREY, A. (2010). "Biography." Retrieved 1/31/2010, 2010, from http://www.allysongrey.com/.

MCKENNA, T. (1992). "Ordinary Language,Visible Language & Virtual Reality." from http://deoxy.org/t_langvr.htm.

MCKENNA, T. (1998). In the Valley of Novelty. The Psychedelic Salon. L. Hagerty.

MCKENNA, T. a. R. A. (1983). "Dynamics of Hyperspace." Retrieved 12/08/09, 2009, from http://www.scribd.com/doc/13362891/Terence-McKenna-and-Ralph-Abraham-Dynamics-of-Hyperspace?autodown=pdf.

MUNN, H. (1973). The Mushrooms of Language. Hallucinogens and Shamanism. M. J. Harner. London, Oxford University Press: 200.

NICOLESCU, B. (2002). Manifesto of Transdisciplinarity. Albany, State University of New York Press.

SHANON, B. (2002). The Antipodes of the Mind: Charting the Phenomenology of the Ayahusca Experience. Oxford, Oxford University Press.

TUCKER, J. W. (2008) "The Evolution of Transformation." Reality Sandwich.

TUCKER, J. W. (2010). Actual Contact. D. Slattery.

WALLACE, B. A. (2000). The Taboo of Subjectivity: Toward a New Science of Consciousness. New York, Oxford University Press.

Simona Sofronie

simona.sofronie@phl.be

Oswald Devisch

oswald.devisch@phl.be

PHL UNIVERSITY COLLEGE
ARCHITECTURE, ART AND DESIGN RESEARCH
INSTITUTE – ARCK, DIEPENBEEK, BELGIUM

AGENDA FOR AN INNOVATIVE ASSESSMENT TECHNIQUE

Over many years of practice, it has often been noticed that people are not aware of their environment (Hannes, 2006), and moreover, do not take part in the planning process of their region. Only when confronted with unwelcome developments, do they start to reflect on their surroundings and manifest disagreement with the imminent transformations. For this reason, we propose a ubiquitous urban game to engage people in a process of perceiving and valuing consciously their living environment, by assessing their environmental images. Simultaneously, this game could inform planners of the genius loci knowledge.

The purpose of this paper is to outline a preliminary agenda for such a game that would assess environmental images as representations of the way people use, perceive and conceive their environment.

With the intention of defining the agenda, a theoretical framework of the environmental image will be provided, by integrating three fundamental – but conflicting – paradigms; the ecological, the cognitive and the phenomenological. They reveal essential features that mediate the acquisition of environmental knowledge. Their conflicting nature resides in the fact that they derive from different paradigmatic traditions, as follows.

The cognitive Western tradition employs as a foundation for its theories the Cartesian dualism, according to which there is a clear dichotomy between the activity of the mind and that of the body, between the person and the environment, between reason and emotion. In this manner, cognitivism regards the body as an input device receiving information, and subsequently, sending it to the mind to be processed, through internal processes. In opposition to the Cartesian model, both the ecological and the phenomenological approaches treat the human body not as a passive receiver of stimuli, but as an active mediator which deliberately looks for information which defines the meaningful properties of the environment. However, while the ecological approach assumes that the world is fixed and permanent, phenomenology treats it as a changing phenomenon, continuously adjusting itself to the transformations of the individual.

The ecological, the cognitive and the phenomenological paradigms will be concisely reviewed next with regard to the environmental image. Despite their conflicting nature, the emphasis here is on their interdependency, which underlines the importance of integrating them as performing together.

ENVIRONMENTAL IMAGE

During their lifetime, people are continuously interacting with their environment, in an attempt to understand it and to adapt to it. This interaction consists in a continuous loop of *perceiving* and *acting* (Gibson, 1966; Neisser, 1976), having as result the acquisition of environmental information through direct experience of the settings.

The *ecological* approach, introduced by Gibson (1979) as one of the most controversial conceptual frameworks proposed in cognitive sciences (Portugali, 1996), brings evidence that sensory perception, attained through active exploration of the settings, is the most straightforward way to elicit the information embedded in the environment. This approach is interpreted as *perception-in-action*, since action is a critical facet of the perceptual process (Gibson, 1979). Hence perception is considered as "active, not passive. It is exploratory, not merely receptive" (Gibson, 1958, p. 43).

Senses are examined as perceptual systems (Gibson, 1966); they are contextual, and therefore they cannot be considered outside of an environment (Lucas, 2007). It can be concluded that to know where one is in the environment, that is, to be *oriented*, requires a panoramic awareness of the overall layout of the environment (Gibson, 1979).

But the environment is a very large and complex setting, and its entire layout cannot be perceived from one single location (Kaplan & Kaplan, 1982; Thomson, 1987; Weisman, 1981). Cognitive operations are therefore necessary to assist the sensory perception. So, the human mind adopts a mechanism of constructing simplified versions of reality (Walmsley, 1988), by integrating local experiences over time. Following Lynch (1960) and Appleyard (1969), we define these simplified versions of reality, as "environmental images", since they entail cognition, as well as affect, meaning and valuation.

In a different fashion, *cognitive sciences* generally employ the notion of "map" – i.e. "cognitive map" (Tolman, 1948), "mental map" (Gould & White, 1974), as they merely focus on the way self-relevant information is stored, structured and retrieved (Leary & Tangney, 2003), in an attempt to determine what people remember about their environment or how accurate the spatial layout is remembered. Cognitive studies have noticed that, while acquiring environmental knowledge, people are going through *internal information processing*. This is a pervasive process, which starts early in childhood (Piaget, 1956), and gradually develops to adulthood, following a similar developmental pattern. In this direction, Siegel and White's model (Siegel & White, 1975) of developing cognitive maps from landmark over route to survey knowledge is the dominant framework.

As a result of these internal processes, people create their own subjectively-defined distortions of reality, using different encoding strategies, related to the attached meanings conferred to places. Distortions are systematic, resulting from cognitive organizing principles facilitating

memory, such as hierarchical organization around anchor points (personal reference points which carry an emotional meaning) – in accordance to the Anchor Point theory (Golledge, 1978).

However, cognitive studies are not interested in understanding the strategies of meaning attachment. It is therefore necessary to investigate further this aspect of the environmental image from a *phenomenological* perspective.

Following Heidegger's (1962) belief that people do not exist apart from the world but rather are immersed in it, Norberg-Schulz (1996) observes that to achieve that compound feeling of truly belonging to a place, two conditions must be fulfilled: *orientation* – people should know how to orient themselves and *identification* – they should identify with the place where they live. While modern society focuses nearly exclusively on the practical function of orientation – extensively examined by cognitive studies-, identification has been almost completely neglected, generating the phenomenon of alienation so frequent nowadays. Environmental image assessment can bring insight into residents' perception of place-defining attributes (i.e. place-identity, sense-of-place), which are, otherwise, fuzzy notions to understand as an outsider.

Phenomenology describes these place-defining concepts as strong *social* and *emotional* constructs, developed over a long period of time, and founded on the interactions between people and the physical setting, their activities and the meanings conferred to places (Relph, 1976). People confer meaning to the environment and then, become attached to the meanings themselves; thus, they are progressively identifying themselves with their surroundings.

While a place may comprise one unique meaning – identity – simultaneously, it may hold as many different meanings as there are people using it (Relph, 1976; Meining, 1979). The different meanings (aesthetic, economic, scientific, ceremonial, spiritual, etc) gathered by a place constitute its *genius loci*, the guardian spirit of a place (Norberg-Schulz, 1979). Phenomenological assessments can assist in understanding how the meanings of the world reveal to us through our actions in it (Dourish, 2001).

The three essential paradigms – ecological, cognitive and phenomenological – illustrated here, convey the significant features that support understanding the environmental image.

ASSESSMENT TECHNIQUES

Assessment techniques employed by these three paradigms are reviewed next to arouse inspiration and to emphasize the need for defining an innovative technique to assess environmental images.

The cognitive assessment techniques, interested in measuring *accuracy* in cognitive maps, act on the premise of the detached scientific mind. They analyze the cognitive processes in the frame of a static, axially oriented visual space. Assessment is usually performed in laboratory circumstances and manipulated by expert-generated concepts, therefore not inspiring for our practice.

Sharing an opposing perspective, experiments in ecological psychology focus merely on undermining the cognitive theories. Following the ecological approach, experiments in sensory urbanism – i.e. *Sensory Notation* (Lucas, 2007) – seem more appealing. Concerned with the qualitative expression of the environment, and rejecting the visual dominance of cognitive techniques, they resemble case studies which focus on the entire sensory experience of places, shaped by seeing, hearing, touching, smelling and tasting.

Visualization of people's unconscious sensory perceptions – physiological arousal – may uncover meaningful experiences, as illustrated by Christian Nold's Biomapping (2006) project. His approach, characterized as "reflection-on-action" (Boyd Davis, S., 2009, p. 48), generates "a new type of knowledge combining 'objective' biometric data and geographical position, with the 'subjective story' as a new kind of psychogeography" (Nold, 2009, p. 5).

Furthermore, phenomenological techniques develop qualitative "case study" descriptions (i.e. ethnographic studies), rich in details and intimate knowledge about how place works for its inhabitants.

The Urban Tapestries project (Proboscis 2004) is considered inspiring; it employs locative technologies to connect places and local stories into a platform for shared knowledge, disclosing the identity of place.

These experiments establish "a simple and powerful tool for reinforcing and recording the experience of being in a place" (R. Lucas, 2007), allowing the unique character of a place to be revealed.

AWARENESS

This concise review of the way people perceptually experience, cognitively process, and meaningfully attach themselves to the environment reveals a common issue: awareness. All these processes are supported and accelerated by the degree of awareness achieved by the observer. The issue of awareness, thus, turns out to be the most important aspect that environmental image assessment has disclosed.

The claim is frequently made that people show little awareness of their surroundings. They experience the environment in an almost unconscious way, paying little or even no attention to the settings around them. Primarily this is due to our *channel capacity* – the limited number of elements the brain is able to simultaneously hold in working memory (Mandler, 1975). A filtering mechanism is thus employed to mediate the process of perception. As a result, "our views of the world, and about people and places in it, are formed from a highly filtered set of impressions, and our images are strongly affected by the information we receive through our filters." (Gould, 1974, p. 29)

Apart from limited channel capacity, it has been noticed that people are also not aware of their knowledge structure. The way people describe the environment is problematical, because they are not aware of their perceptions much of the time, and they don't even have labels for much that is experienced. The process through which people are "seeing" and "reading" an environment is a process hardly accessible to consciousness (Kaplan, 1991). As explained by Kaplan's SESAME theory, people possess unconscious information that can be activated by unexpected associations of perceptual features that have occurred together in the environment (Kearney & Kaplan, 1997) – i.e. scent can ignite memories of places, events, etc. The 3CM methodology (Kaplan & Kearney, 1997), derived from this theory, assist people in discovering unconscious information during the process of externalizing it.

And finally, people know little about their surroundings because they act almost unconsciously in a familiar environment. This is explained by *habitual adaptation* to the same environmental stimuli, or "thinking ahead" (Downs & Stea, 1973, p. 10). After decoding an adequate amount of information, sufficient to meet the daily requirements, people stop "reading" the environment. Space becomes "the very decor of people's life, and not more than an apparently unnoticed and unimportant background" (Hannes, 2006, p. 8). Movement is always goal-directed, so, once the orientation function is fully accomplished, there is no motivation for further exploration, and people experience their environment in a passive way, like with their eyes shut (Downs & Stea, 1973). When habitual adaptation emerges, the spatial learning process starts to fade. This is the moment when assistance to achieve awareness is necessary, and this can be attained through means of a ubiquitous urban game that visualizes environmental images. By means of ubiquitous technology, the game will employ location-based assessments which focus on the holistic experience of the environment, involving the interplay between cognition, sensory perception and emotions.

CONCLUSIONS

The theoretical framework of the environmental image and the assessment techniques it entails outline several principles that should be pursued when defining an agenda for an innovative assessment technique.

First, assessment must follow the normal ecology of the organism and the environment, delineated by the interaction body – mind – environment. The context is crucial in assessment, since active exploration of the environment bring information about the physical aspect, but also more subtle information, perceived through the complete spectrum of sensory modalities.

Serendipity is encouraged, while actively experiencing the environment, since unexpected associations of perceptual features may activate unconscious information in the brain. Ideally, the assessment should help participants in exploring their knowledge structure while externalizing it.

It is essential that assessment is not manipulative, imposing expert-generated concepts, but allows for emergent concepts defined by participants.

Assessment should follow the normal course of participants' life – their daily activity behaviour – to identify the meanings attached to the environment, exposed through people's actions.

Eventually, we suggest supporting our sense of presence, and thus, fighting habitual adaptation through means of some disruptive action that would challenge routine and simultaneously rouse our fragile capacity for awareness.

The solution proposed by this paper – a triangulation of ecological, cognitive and phenomenological paradigms to define the environmental image – is intended to achieve a translation of the findings into principles for defining the agenda for assessment. Thus, a better understanding of the way people cope with their surroundings can raise awareness about the environment and subsequently provide solutions for improving this person-environment union. The upcoming purpose of this research is to validate these principles, by actually developing a ubiquitous urban game.

REFERENCES

ANDERSON, M. L. 2003. Embodied Cognition: a field guide. Artificial Intelligence 149, 91–130.

APPLEYARD, D. 1969. Why Buildings Are Known: A Predictive Tool for Architects and Planners. Environmental and Behavior 1, 131–156.

BOYD DAVIS, S. 2009. Mapping the unseen: making sense of the subjective image. In: NOLD, C. (ed.) Emotional Cartography.

BOYLE, J. M., AND M.E. ROBINSON 1978. Cognitive mapping and understanding. In: HERBERT, D. T. & JOHNSTON, J. (eds.) Geography in the urban environment. London: Wiley.

DOURISH, p. 2001. Where the Action Is: The Foundations of Embodied Interaction, Cambridge, MA, MIT Press.

DOWNS, R. M., & D. STEA 1973. Image and environment: Cognitive mapping and spatial behavior, Chicago, Aldine.

EVANS, G. W., MARRERO, D. & Butler, p. 1980. Cognitive mapping and architecture. Journal of Applied Psychology, 474–478.

GIBSON, J.J. 1958. Visually controlled locomotion and visual orientation in animals. British Journal of Psychology 49, 182–94.

GIBSON, J.J. 1966. The senses considered as perceptual systems, Boston, Houghton Mifflin.

GIBSON, J.J. 1979. The ecological approach to visual perception, Boston, Houghton Mifflin.

GOLLEDGE, R. G. 1978. Learning about urban environments. In: CARLSTEIN, T. et al (ed.) Timing space and spacing time. London: Arnold.

GOULD, p. , AND WHITE, R. 1974. Mental maps, Harmondsworth, Penguin.

HANNES, E., D. JANSSENS, AND G. WETS 2006. Proximity is a State of Mind: Exploring Mental Maps in Daily Travel Behaviour, paper presented at the 11th International Conference on Travel Behaviour Research, 2006, IATBR, Kyoto, Japan.

HEIDEGGER, M. 1962. Being and Time, New York, Harper and Row.

KAPLAN, R. 1991. Environmental description and prediction: a Conceptual analysis. In: GARLING, T. & EVANS, G. W. (eds.) Environment, cognition and action. New York: Oxford University Press.

KAPLAN, S. & KAPLAN, R. 1982. Cognition and environment : functioning in an uncertain world, New York, Praeger.

KEARNEY, A. R. & KAPLAN, S. 1997. Toward a Methodology for the Measurement of Knowledge Structures of Ordinary People: The Conceptual Content Cognitive Map (3CM). Environment and Behavior, 29, 579–617.

LEARY, M. R., & TANGNEY, J. P. 2003. Handbook of self and identity, New York, Guilford Press.

LUCAS, R. 2007. Laban notation and qualitative representations of urban density. MIT Urban Studies Group Paper.

LYNCH, K. 1960. The image of the city, Cambridge [Mass.], The Technology Press & Harvard University Press.

MANDLER, G. 1975. Memory storage and retrieval: Some limits on the research of attention and consciousness. In: RABBIT, p. M. & DORNIC, S. (eds.) Attention and performance. London: Academic.

MEINIG, D. W. 1979. The interpretation of ordinary landscapes, New York, Oxford University Press.

NEISSER, U. 1976. Cognition and reality: principles and implications of cognitive psychology, San Francisco, W. H. Freeman.

NOLD, C. 2009. Emotional Cartography. www.emotionalcartography.net.

NORBERG-SCHULZ, C. 1979. Genius Loci, towards a Phenomenology of Architecture, New York, Rizzoli.
NORBERG-SCHULZ, C. 1996. Phenomenon of place. In: NESBITT, K. (ed.) Theorizing a new agenda for architecture. Princeton Architectural Press.
PIAGET, J. & INHELDER, B. 1956. The child's conception of space, London, Routledge & Kegan Paul.
PORTUGALI, J. 1996. Inter-representation networks and cognitive maps. In: PORTUGALI, J. (ed.) The construction of cognitive maps, Dordrecht, The Netherlands: Kluwer Academic Publishers.
RELPH, E. 1976. Place and placelessness, London, Pion Limited.
SIEGEL, A. W., AND S.H. WHITE 1975. The development of spatial representations of large-scale environments. In: REESE, H. W. (ed.) Advances in child development and behavior New York: New York.
THOMPSON, J. A. 1987. Cognitive and motor representations of space and their use in human visually guided locomotion. In: ELLEN, p. & THINUS-BLANC, C. (eds.) Cognitive Processes and Spatial Orientation in Animal and Man. Dordrecht: Martinus Nijhoff.
TOLMAN, E. C. 1948. Cognitive maps in rats and men. Psychological Review, 55, 189-208.
WALMSLEY, D. J. 1988. Urban living: the individual in the city, Harlow, Essex, England,
Longman Scientific & Technical
WEISMAN, G. 1981. Evaluating architectural legibility: Way-finding in the built environment. Environment and Behavior, 13, 189-203.

Marko Suvajdzic

ASSOCIATE PROFESSOR AND DEPARTMENT HEAD
ACADEMY OF ART, BELGRADE, SERBIA
DEPARTMENT FOR COMPUTER ARTS AND DESIGN

PHD CANDIDATE, THEORY OF ART AND MEDIA,
SCHOOL FOR INTERDISCIPLINARY STUDIES,
UNIVERSITY OF ARTS, BELGRADE, SERBIA,
msuvajdzic@yahoo.com

CULTURAL ROLES AND IDENTITY *- An Interactive Upgrade*

INTRO:
In the paper "Cultural Roles and Identity – An Interactive Upgrade", I analyze the role of social media and the effect that it has on the cultural identity of a contemporary human being. More specifically, I point towards the human need to fit into various socially predefined roles. Further, I expand the argument to encompass the limited availability of roles within a given society pre- and post- Internet era. Finally I analyze a new phenomenon caused by this shift in which one is presented with an entirely new set of roles to choose from, or to turn into, while being online (connected to the Internet). I shall refer to this new phenomenon as the New Social Dimension.

**

I will take it as a premise that the need to belong is a fundamental human trait. A sense of belonging is the feeling of being connected and accepted within one's family and community. Sense of belonging is important in healthy human development and combating behavior problems and depression.

In his 1943 paper "A Theory of Human Motivation," American psychologist Abraham Maslow cited belonging as the third most important human need on his hierarchy of human needs, after only physiological and safety needs. After physiological and safety needs are fulfilled, the third layer of human needs is social and involves feelings of belongingness. This aspect of Maslow's hierarchy involves emotionally based relationships in general, such as:

- Friendship
- Intimacy
- Family

Humans need to feel a sense of belonging and acceptance, whether it comes from a large social group, such as clubs, office culture, religious groups, professional organizations, sports teams, gangs, or small social connections (family members, intimate partners, mentors, close colleagues, confidants). They need to love and be loved (sexually and non-sexually) by others. In the absence of these elements, many people become susceptible to loneliness, social anxiety, and clinical depression.

**

Once we accept the premise that human beings have a need to belong, we can focus next on has that need has been fulfilled in the past, and what is different about it in comparison to the New Social Dimension of today.

Traditionally, human beings have searched for acceptance within the group to which they belonged. The particular group was defined through the means of communication. During the period of our history when communication was primarily oral, the group to which one belonged was relatively small, since it was limited only to those with whom one could get in direct contact. Thus, one's reality was defined by a very narrow slice of possibilities. Reality was whatever that particular subgroup of all of humanity was introduced to to date, and was able to recall through memory. Communication was limited, and it did not have any processes in place that would insure a diversification of cultural roles within homogenous groups. Thus when an individual felt "different" it would be only logical that the fault was on the individual. After all, no one else within the (very small) group may have had the same issues, and so the reality would often feel odd (odd in the way that a person would not fit in the group, yet would have no conscious thought that things may be different in some other group at some other location).

With the advent of writing, and later on with the advent of the printing press, and even later on, with all of the other "One-to-many" media (eg. TV, radio), communication channels have opened up dramatically. Despite the fact that printing has been made available to the masses only relatively recently, as soon as there was a capability to write, there was a possibility to communicate with people over great distances, and just as importantly over time. This was a fundamental shift in reality. A person was able to read what others from different cultures believed. There was a great cross pollination within world cultures. Separate, homogenous groups started to be introduced to other foreign cultures and their traditions. This process of intensified communication brought with it both positive and negative effects on an individual's search for the real.

The recorded word allowed cultures to expand and to be introduced to new ideas. Individuals gained knowledge not just of local traditions but of foreign and distant traditions too, as well as new cultural roles available within them. Once introduced to this variety of cultural roles, many people were able to better understand themselves. Reality became a tiny bit more real because there were others out there that felt and thought the same way. One was made aware of this through the written word. It must have been a great relief to feel the sense of belonging with humanity, even in instances where one's local culture may not have proven to be compatible and supportive of one's specific needs for personal identity fulfillment.

The written word is in its nature a one-way process. So is the case with TV and Radio. Communication flows from

the author to the reader, without an option for feedback. Thus a reader is made aware of the message, but is not able to interact; s/he is not able to imitate or partake. Being essentially a one-way communication media, all "One to many" forms of media have not been able to provide a true sense of reality. As a matter of fact, on quite a few occasions "One to many" media has created frustrations among humans for its lack of full two way communication. A reader/viewer/consumer is given something, and is not allowed to communicate a response to it. This kind of communication often results in frustrations and disillusionment.

This frustration with of one-way communication, and the knowledge created without being allowed to respond, often reminds me of a conversation I had with a young boy in Nepal (spring 2003). He slaved as a kitchen boy in a Hotel in Kathmandu. He was 16 and was completely devastated by his surroundings (a hotel that catered to foreign tourists which is considered great employment for the local citizens). In my conversation with him, he expressed an amazingly high level of awareness of his own situation and of self perception and self positioning in the greater scheme of world cultures and cultural roles that were made available to him. He was poor, yet he would spend all his days interacting with rich foreigners who would introduce him to many ideas that were unreachable to him. He had easy access to TV and radio, and he read foreign papers that people left behind in their hotel rooms. He knew of equality and human rights, but he had none of it. He knew of marriage for love but he was forced to marry when he was thirteen. He knew of airplanes, cell phones, laptops … yet he also knew that he will never own or use any of them. That young Nepalese boy was living a dream, a bad dream that is. His reality was not his. Due to his awareness of the other side, he lived a life unreal to himself. It is in this disconnect between awareness and interaction where "One to many" media failed in extending the realm of true possibilities.

**

At the center of recent changes we find New Media and its contemporary impact. The continuous decrease in the price of technology has played an important role in this development. Cheaper processor prices, increased Internet bandwidth and smaller, more portable communication devices that are permanently connected to the communication grid have all affected the way we receive and broadcast information. These changes have affected many if not all of the traditional media, where the traditional media had to adjust and find a new way of existence as well as content delivery that was in tune with the new ways of consuming media.

It is only in the last five years that the IT infrastructure was mature enough to support a completely new way of interacting. The all interconnected network of people started to create content with ever increasing speed. A vast majority of the US population is now online, and many of those that are online are using one of the social networks. Each one of them is posting information and broadcasting himself/herself into the cyberspace. Each person is becoming a participant rather than a passive observer. If the twentieth century brought us the idea of the death of the author (Roland Barthes, 1967), then the twenty first century is bringing us the death of the audience. In the era of social media, there is no more delineation between the author and the audience; each one of its users is also a broadcaster.

Today, the Internet and social media are creating a new type of collective that is not restrained by geography, but rather by the likeness of mind. These new entities (online and interconnected "sanghas" of a sort) have been facilitated into existence through the creation of new technologies, and through the increased ease of communication which technology has made possible in the last decade.

One of the very recent examples of how New Social Dimension has influenced reality can be exemplified by the Berber struggle for identity. Berbers are the indigenous peoples of North Africa, west of the Nile Valley. Their presence in the region can be traced as far as three thousand years ago. However today they have no country of their own, they are nomads, and in most of the countries where Berbers live, they are considered second class citizens. They are perceived by their host nations as backwards folk who dress up in traditional clothes. They were often ashamed of their own identity within the larger groups, and had no way of reaching each other and sharing their traditions and culture. Berber culture seemed doomed as recently as ten years ago.

However their case has changed with the introduction of the New Social Dimension. Internet has brought a revival in the Berber struggle for identity. Easily portable laptops have become a norm among Berbers today. Many Berber specific forums and social groups have sprung up. Berber music, art, and history is being recorded at a tremendous pace and new connections between the tribes are made on daily basis. This advance in conectedness had two distinct effects on Berber identity today:

1. *Intraconnectedness* among Berber people happened through Internet in a manner that was not possible before. Today young Berber men and women chat with each other, and with their friends who may live in different cultures and can share their life challenges and provide a network of support to each other.
2. *Interconnectedness* between Berbers and the rest of the world happened in a rather surprising way. Berber people used Internet to share their music and art with each other, but at the same time they also shared it with the whole world, and the world took notice of it. Today, their music is sought after and their art is well respected. But far more importantly their culture is being recognized by others, and they are becoming equal to the rest of their neighbors, both in their self perception, and in the eyes of others.

To Berbers, the reality of New Social Dimension is very real. It provides them with a cultural nucleus around which they are weaving the web of their cultural fabric. Their identity today is defined by their online activities as much as by their offline struggle.

The Internet has allowed for the first time in the history of the human race a massive "Many to many" communication. It is now possible not just to speak or write to others that may be far away geographically, but it is also possible for that person to respond in real time, to talk through video, to send emails, to attach movies ... The Internet has made local (and until recently the only) reality only one of the dimensions to which we belong, by creating another

one, parallel to it, that is networked and interconnected on a massive scale.

The seed of New Media germinated into the New Social Dimension around the turn of the century, more specifically between 1993 with the creation of the first web browser, and 2004 with Tim O'Reilly coining the term "Web 2.0." The existence of this New Social Dimension has fulfilled itself through the forces of the sharp and continual decrease in the prices of technology, the miniaturization of technology, and the capability to easily connect to the grid (the Internet) from portable mobile devices. This type of ever-connected state of existence is a fertile ground for expressing oneself.

In cyberspace, one is given a chance to create one's own persona according to one's own liking rather than to the demands of a particular society, and/or availability of cultural roles in one's political environment (including political and cultural restrictions that often come with expressing one's beliefs in historic human societies). Once connected to the grid, a person's geographic location ceases to play the monopolistic and defining role in determining ones' personality, and in turn ceases to define how we interact and communicate with others. It is in the online reality one often feels more freedom in expressing oneself. It is online that one can associate with a community of like minds regardless of geographical distance. It is online and within the New Social Dimension that our own reality often seems really real.

It is during this period of around the turn of the 21st century that humans have created a new, synthetic, infrastructure that gave rise to the existence of the New Social Dimension.

This new aspect of our reality is different, but complimentary to the already existing reality of our bodily senses. These two dimensions of our reality will never substitute each other; rather, they will continue to add upon each other, and in this manner further diversity to the scope of existence that human beings are capable of perceiving.

REFERENCES:

NOTE: All pages accessed on June 26 2010

1. http://twopointzeroforum.blogspot.com/ Media Studies 2.0 Forum
2. http://www.theory.org.uk/mediastudies2.htm – Media Studies 2.0 by David Gauntlet
3. http://www.theory.org.uk/ – The media theory site
4. http://www.praxagora.com/andyo/professional/article.html – Articles by Andy Oram (*super nice)
5. http://www.praxagora.com/community_documentation/ – writings by Andy Oram about web pages, forums, and other media used by users of technology to educate each other
6. http://www.techcrunch.com/2009/12/12/social-media-message/ – "The Medium Is No Longer The Message, …You Are" by Seth Goldstein
7. http://blog.sethgoldstein.com/ – Seth Goldstein blog
8. http://www.aber.ac.uk/media/Documents/short/cultiv.html – "Cultivation Theory" by Daniel Chandler
9. http://www.regent.edu/acad/schcom/rojc/mdic/md.html – "Media Determinism in Cyberspace"

Victoria Vesna

PROFESSOR, DEPARTMENT OF DESIGN | MEDIA ARTS, UCLA SCHOOL OF THE ARTS
DIRECTOR ART|SCI CENTER, UCLA
LOS ANGELES, USA
DIRECTOR UC DIGITAL ARTS RESEARCH NETWORK

Siddharth Ramakrishnan

METAMORPHOSIS OF THE HUMAN ANIMAL: HOX ZODIAC

"Taking it in its deepest sense, the shadow is the invisible saurian tail that man still drags behind him. Carefully amputated, it becomes the healing serpent of the mysteries. Only monkeys parade with it." (Jung, The Integration of the Personality, 1939)

The *Homeobox (hox) genes* essentially define body regions in all animals including humans – responsible for determining two arms, two legs, one nose and so on. This gene is shared by all living beings – from the snail to the elephant to humans – and they can now be manipulated into deliberate transformations of existing body parts into others. Hox genes are expressed along the anterior-posterior (A/P) body axis in majority of animals, creating a unique A/P code which plays a pivotal role in segment specific morphogenesis. Such transformations, like that of an amputated antenna into a limb, have been observed as far back as 1901 [1] and has only relatively recently re-emerged as an area of scientific study. Spontaneous transformations and induced regenerations is fascinating research that is fast becoming a reality and some scientists are postulating that it may be possible that the hox genes could be central to limb regeneration in the future [2]. Conceptually the possibility of manipulated animals has been pervading in our literature from myths and mythologies of different civilizations to popular fiction over the ages. Many of these creatures are well set in our collective consciousness with stories that are told to us as children.

BACKGROUND

The Hox Zodiac project and philosophical dialogue took place alongside the continuous development of "Blue Morph", a major work developed in collaboration with nanoscientist James Gimzewski. Meditations and numerous discussions about the multi-dimensional interpretations of the metamorphosis of a chrysalis into a butterfly frequently brought to attention various issues concerning biotechnology of the human body and mind. Most intriguing of all and perhaps least anticipated was the audience relationship, approach and participation with the installation. Vesna and Gimzewski discovered that there was a pervasive need for people to connect to the spiritual aspect and grasp the meaning and, in many cases, the pain of major paradigm personal/collective change. More recent research that Gimzewski is conducting in his lab deals with the idea of the artificial brain that involves molecular imaging of neurons taken from transgenic mice and rat brains. Vesna started questioning the fact that the scientist, just as most humans, has a strong fear and repulsion of the animal but does not consider this when doing research. Although the controversy of using animals in labs is widely known and often violently opposed, the artist in the lab questions how this research impacts our collective consciousness, especially with the growing trend of brain-computer interfaces and particularly synthetic telepathy. This relationship of the human to the metaphorical meaning of the animal kingdom brought to mind Jung's research on metaphors, symbolism and archetypes, which became central to the *Hox Zodiac*. While Jung's work is of little importance in contemporary psychoanalytic practice, it remains widely influential in such fields as religious studies and literary criticism and is frequently summoned in this inquiry.

Ramakrishnan's research is based in neurosciences and he worked on zebrafish development when this project commenced. In discussion about his research, he introduced the idea that Hox genes seem to be a somewhat neglected area of scientific research. Vesna observed the difference in the approach of the Scottish scientist, Gimzewski to the Indian scientist, Ramakrishnan and both confirmed that the Western mind in the science labs almost violently forbids any ideas of the "soul" or "intelligence" and that bringing the unknown into the discussion can endanger if not destroy a scientific career. As the off-line discussions swerved to the unconscious realms occupied by mythical creatures and gods such as Shiva, the idea of hox gene manipulations shifted from the materialistic manipulations of the genes to an inquiry into the way humans deal with metamorphosis and our relationship to the animal kingdom. Being that this research is centered around biotechnology, the dark side of the human endeavor to control nature inevitably emerged. But also due to Ramakrishnan's Indian background, the artist and scientist frequently framed their discussions interest in Indian mythology in relation to scientific ideas around genetics, evolution and recent biotech research.

CHINESE ZODIAC AS INTERFACE

When invited to participate in an exhibition in Shanghai, China, Victoria Vesna decided to test the concept and she was at first baffled by the problem of creating an interface for a master gene, which is essentially shared by all animals. Inevitably, the idea of the Chinese zodiac came up when researching and it seemed a perfect vessel for portraying the human relationship with the animal kingdom that goes beyond the materialistic view of the scientist or daily interaction with pets or animals as prey. Further, the influence and role of China in almost every aspect of our existence is nothing short of overwhelming to the West. This was a way to create an interface into the cultural impact of this rising power. Many confronted the Chinese zodiac

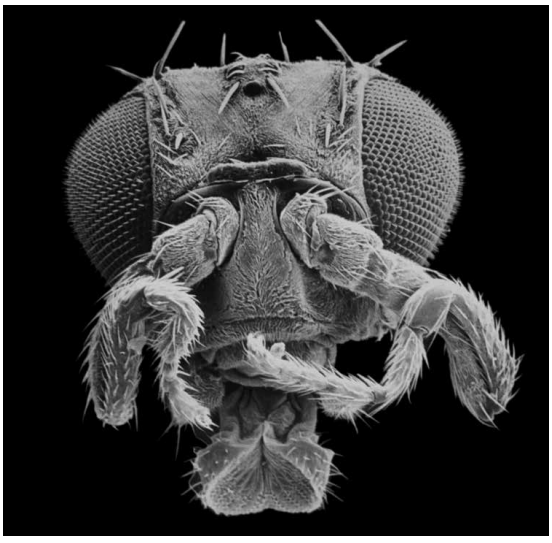


FIGURE 1: *Legs on the head: Antennapedia mutation in the fruitfly, causing legs to grow in place of antennae*

FIGURE 2: *Physical interface for the Hox Zodiac*

for the first time but a surprising number were fully aware of their corresponding animal and it became interesting to think about how this is merging with the Western zodiac. Although the majority claimed that they did not believe in the predictions of their corresponding zodiac animal, we came across very few people who did not know their sign in at least one tradition.

Ramakrishnan brought to the Hox zodiac table the Indian philosophical approach to astrology that became an important element as we proceeded. India's influence on the sciences, through philosophy, yoga and IT is much larger in the West than most people are aware of, and this is definitely true in relation to the animal, the myth and philosophy of life. Here Jung's work became a necessary reference, as the psychology he developed is based on psychic totality and psychic energetics. He postulated two dimensions in the unconscious – the personal (repressed or forgotten content of an individual's mental and material life) and the archetypes (images, patterns, and symbols that are often seen in dreams and fantasies and appear as themes in mythology and religion) of a collective unconscious (those acts and mental patterns shared by members of a culture or universally by all human beings).

The Chinese calendar/zodiac is a scheme that relates each year to an animal and its reputed attributes, according to a 12-year cycle. This system, with some variations, is used by a large part of Asia including Korea, Japan, Vietnam and Thailand. The animal signs are used for dating the years and represent a cyclical concept of time, rather than the Western linear concept of time. The Chinese Lunar Calendar is based on the cycles of the moon, and is constructed in a different fashion than the Western solar calendar. In the Chinese calendar, the beginning of the year falls somewhere between late January and early February. The Chinese have adopted the Western calendar since 1911, but the lunar calendar is still used for festive occasions such as the Chinese New Year.

According to Chinese legend, the twelve animals quarreled one day as to who was to head the cycle of years. The gods were asked to decide and they held a contest: whoever was first to reach the opposite bank of the river would be first, and the rest of the animals would receive their years according to their finish. All the twelve animals gathered at the river bank and jumped in. Unknown to the ox, the rat had jumped upon his back. As the ox was about to jump ashore, the rat jumped off the ox's back, and won the race. The pig, which was very lazy, ended up last. That is why the rat is the first year of the animal cycle, the ox second, and the pig last.

In the process of development, it became interesting to note that half of the animals on the wheel are those used as test models in the lab – rat, pig, monkey, dog, sheep and rabbit. The ox, tiger, horse, snake, rooster are considered mythical and the dragon could easily fall into the category of a genetically modified creature that is to re-emerge in the future. Here we focus on the first and last animal of the zodiac, the rat and the pig, for the pig heart and rat mind are symbols for the paradox of science that uses animals in ways that is on one hand disconnected and on the other connected through research results concerning medical and food products we consume.

RAT/MOUSE

"Rats!
They fought the dogs and killed the cats,
And bit the babies in the cradles,
And ate the cheeses out of the vats,
And licked the soup from the cooks' own ladles,
Split open the kegs of salted sprats,
Made nests inside men's Sunday hats,
And even spoiled the women's chats,
By drowning their speaking
With shrieking and squeaking
In fifty different sharps and flats."

The Pied Piper of Hamlin poem by Robert Browning was contributed to this paper by Gimzewski, who knows the verse by heart and pointed out that it was taught in England to all young children. Based on a medieval legend concerning the departure or death of a great many children from the town of Hamelin in Germany, it is speculated that they

disappeared due to death by plague. Although this dark image of the rat is firmly in the scientist's subconscious, the connection to this dark image is avoided by working with the abstracted rat neurons in the petri dish.

The rat and/or mouse, in many ways is a perfect starting point for this exploration of cultural and scientific global mutations. Unquestionably, it has a dark side that goes beyond the physical aspects with which virtually every country in the world deals – it is deep in the human psyche, connected to our fears. In the Chinese zodiac, if one is born in the year of the rat, he or she is marked as forthright, tenacious, intense, meticulous, charismatic, sensitive, intellectual, industrious, charming, eloquent, sociable, artistic, shrewd, and can be manipulative, vindictive, self-destructive, envious, mendacious, venal, obstinate, critical, over-ambitious, ruthless, intolerant, scheming. At their worst, rats are ruthlessly power-hungry, vindictive, and Machiavellian.

Because of their destructive ways, mice and rats were considered unclean creatures of ill omen. They were symbols of evil, pestilence, death, decay, infirmity, plague, demons, and the Devil. Like Satan and his minions, mice and rats were believed to thrive off the misfortunes of the children of God and to enjoy bringing humans to ruin. Ancient Greeks carried mouse coins to protect themselves against the mouse's evil eye and in India rat temples were built to appease the demons associated with these creatures.

One could easily complete a global survey of mythology and stories related to rats and mice whose activities are frequently believed to be quite prophetic symbolizing extreme good or bad omens. Frequently they are said to flee sinking ships and houses where death was imminent and appeared in large numbers as an omen of war – most likely ready to feast upon the impending destruction. In Rome, white rats brought good fortune. In Germany, white mice brought either good luck or death with them. The scurrying and squeaking of mice indicated that a storm was approaching. An unhappy turn of events was foretold when a mouse or rat chewed on religious items.

Rat tails were associated with tangles of confusion, misfortune, and rumor. To show the passage of time, Renaissance art sometimes depicted night as a black rat and day as a white one. Chinese mythology states that the rat brought the gift of rice to humankind. There and in other places, it is a symbol of prosperity, wisdom, and prophecy.

The rat appears in contemporary symbolism as well – the desert rat has been used as an emblem of British soldiers in desert campaigns in the Gulf War. Having this general sense of the power of the mouse and rat in the human psyche, we turn to the booming population of the genetically engineered species in labs around the planet.

Research among rats and mice has been going on for so long that there are now specific lab-bred strains of these creatures that lack similarity to the wild species. There are rat and mouse models for a variety of physiological dysfunctions ranging from morbid obesity to epilepsy to alcoholism [1]. Transpogen Biopharmaceutical is one of many companies that serves as an example of the kind of research that has resulted in a mutated mouse that now is part of our (suppressed) collective unconscious and we explore the meaning of the mutated animal. Announcing the updated website, the company's CEO made a statement that clearly shows the thinking behind this kind of work: "We are now able to communicate to a global audience the benefits of using Transposagen's MutaRat™ technologies in drug discovery research," said Dr. Eric Ostertag, CEO of Transposagen Biopharmaceuticals, Inc. Transposagen Biopharmaceuticals is a privately held biotechnology company based in Lexington, KY. The company is dedicated to providing unique animal models of human diseases for drug discovery and development. The production of animal models is a $1.2 billion/year market and is expected to grow 12 % annually through 2010.

A recent article in Nature magazine refers to a large-scale investment in mutant rat models that is being pushed in Europe [2]. Moving from mice to rats is explained in the Knock Out Consortium site: "Rat models are superior to mouse models for testing the pharmacodynamics and toxicity of potential therapeutic compounds, partially because the number and type of many of their detoxifying enzymes is very similar to those in humans."[3]

This factory breeding of strains and mutants of mice and rats has also given rise to the concern that they are far removed from the species in their natural setting and that the research solely based on such "artificial animals" may be flawed. For instance, studies on effects of bisphenol A, an environmental estrogen found in plastic, resulted in varying results depending on whether the research was conducted by the EPA/plastic industry or by university researchers. It was later found that the strain of rats used by the EPA/plastic industry were insensitive to estrogens [4].

Despite all the concerns, rats and mice are the predominant models of mammalian research, especially those in relation to development and the brain. Indeed a wealth of information regarding our learning and memory, neuropathology and stress-induced behavioral responses are a direct product of research on these animals. When science delves into the intricacies of brain function – the basic building blocks of a neuron, the assembly of such nerves to form functional circuits and the response of such circuitry to external environmental inputs – when broken down into these parts, the similarities in working between all beings is glaringly clear. In a fundamental way, the Hox genes also speak to such a fundamental similarity amongst all animals – a common blueprint that underlies all body forms.

Mice and rats have also featured predominantly in the field of Hox gene research. Studies have shown the importance of Hox genes in defining the different regions of the brain, organ development and even in regeneration of bones [5] [6]. While such studies involve Hox gene manipulations, they have not resulted in producing multi-limbed rodents or mice with tails on their heads, as most such drastic alterations render the embryo unviable. But the underlying potential for such transformations exist, opening up the possibility of a world of hybrid entities. One line of work that is slowly gaining traction is the mouse-human chimeras. Images of the mouse with a human ear on its back are popular, but recently there have been debates over the possibility of a mouse with a human brain [7]. That, in essence, would be the true hybrid.

This scientific trend sparked interest in not only the emotionally charged animal rights protesters, but also those who grappled with the complex nature around this kind of research. Theorist Donna Haraway inspired many across disciplines with her exploration of the "OncoMouse"

FIGURE 3: *Kathy High. "Rat Hero" (2005), Embracing Animal installation at the MASS MoCA exhibition. Echo, HLA B27 transgenic rat*
Photo: Olivia Robinson

FIGURE 4: *AFM images of rat neurons by James K. Gimzewski and Shivani Sharma CNSI, 2010*

(Modest Witness@Second Millenium. FemaleMan meets OncoMouse. Routledge, 1997), using literature and arts to help define and explain her feminist viewpoint of techoscience, as coined by Bruno Latour – to deal with the separation of what we define as "science" and "society". In 2006, artist Kathy High created an important work "Embracing the Animal" addressing our relationship to the rat in the labs

QUESTION OF THE "SOUL" OR "INTELLIGENCE"

Considering that most of research in neuroscience is based on rat neurons the artist in the lab wonders if by creating specialized species of rats or other animals influences our human condition in a deeper way that is linked to our unconscious? Imagining the human mind or body related in any way to a rat brain creates an uncomfortable feeling given our relationship to this animal in mythology and daily life. Scientists see the neuron abstracted from the complex, entangled relationship with the animal and make assumptions based on a materialistic, rational approach that may limit the possibilities of research. This is not a case for or against using rats, mice or any animals in research but instead suggesting that if we are inherently connected and similar in our genetic structure, this must go beyond the physical matter, including the neuronal level. Most would rather not face this possibility or dare mention the idea of the soul or an intelligence that exists even at the nascent, cellular, nano level of neuronal development. And so it is buried in our collective unconscious and is kept safely locked with no scientifically based thesis and thus no possible attempt to prove the unknowable. Indeed the very mention of this word in a scientific context will bring up instant distance and, in some cases, distrust and animosity. This brings us back again to Carl Jung whose wide and deep explorations into the collective human psyche and archetype led him to consider the idea of the soul. When he crossed this threshold, he was unofficially disqualified by the scientific community and only recently is being reconsidered as a serious psychoanalyst in those circles. By approaching what cannot be proven by existing scientific methodologies, he entered the realm occupied by artists, musicians, poets and philosophers. We did notice however that this is not as true for scientists from India although they too have to be careful, as the field is so global and the world is small.

The relatively young field of biotechnology along with the new science of nanotechnology are by definition comprehensive and have to balance specializations such as the neurosciences, behavioral psychology, cognitive sciences, neuroendocrinology – all of which collectively can be taken to debunk philosophies of old concepts such as the soul (Pinker, Steven. *How the Mind Works*. New York: Norton, 1997). There are some scientists who are more open to possibilities opened up with the science of quantum mechanics. Most never cross the dangerous line that enters the unknown realm of what we refer to as the "soul", afterlife and any ideas of "god", unless highly successful and well into their career and life path. Recently a young neuroscientist David Eagleman dared to address our collective ignorance and when asked on NPR what his belief system is, he coined the term "possibilian". What surprised him was the number of people who related and embraced this idea that is overdue from the scientific community. It

was interesting to note during our discussions that the concept of science and religion had no conflict with the Hindu philosophy, but was rather bound to it. It may be that the perception that these concepts are not mutually exclusive – as portrayed in the western scientific philosophy – but more of a cultural, social climate of where such scientists are cultivated. Neuroscientist V.S. Ramachandran, famed for his extraordinary work phantom limbs, discusses the brain's ability to develop metaphors as an important function and may be helping bridge this separation with his thesis of "the artful brain". (A Brief Tour of Human Consciousness, 2004)

Neuroscience is concerned with figuring out human consciousness and the main path to this research is via the rat or mouse that is genetically modified for a specialized, reducted area of a particular focus. Memory, vision, time perception, subjectivity, objectivity and the huge mass of the deep unknown space of the unconscious are edited out in the process. The brain, made of hundreds of billions of cells we call neurons, each holding the entire human genome in it with biochemical actions and signals and having about thousand connections with the neighboring neurons. One cubic meter in the brain has as many connections in it as there are stars in the Milky Way galaxy. So, we are looking into a mirror of our brain that has hundreds of trillions of connections, which, for lack of a better way to explain it, short-circuits the system. We know what we don't know and this is very confusing – this is the dark matter in our collective consciousness.

When the artist enters the lab, she has the poetic license and is allowed to ask the uneasy questions that emerged out of this dialogue: "If scientists consider the fundamental structures at the cellular level to be the same, and thus justifying the research results of rats and pigs to be considered for humans, are we connecting closer to the essence, the nature of these animals and what does that mean for us? If we consider that all animals including humans are organic life forms, which on a very minute, microscopic (or perhaps in this day and age, nano-scopic) scale are founded on the same building blocks - lipids and proteins, protoplasm and ectoplasm, cells and tissues, do we automatically assume that they possess the same nature, or what some refer to as a soul? Do we ignore this question because it is not possible to prove the existence or non-existence of the soul based on our limited perception of reality in the current paradigm? Is a brain just a collective of neurons that is fitted into a set of equations? If the neurons are the basic parts, do they always add up to the expected "whole"? In essence, there is an unknown factor that translates (perhaps transcends) the machinery that builds the network, making it a being. Some may say that this is as yet "not discovered", and some may call it the soul. Taking all of the above in consideration, how do you relate to your zodiac sign, especially if you are a rat or a pig?

NOTES:

1) www.harlan.com/research_models_and_servics/research_models_by_product_type/mutant_rats
2) Abbott, A. (2009), Return of the rat, Nature, 460: 788
3) http://www.knockoutrat.org/index.php?iid=19

4) vom Saal FS., Welshons WV, (2006) Large effects from small exposures II. The importance of positive controls in low dose research on bisphenol A., Environ. Res. 100: 50–76
5) Mallo M, Wellik DM, Deschamps J., (2010), Hox genes and regional patterning of the vertebrate body plan., Dev Biol. ,344(1): 7–15.
6) Narita Y, Rijli FM. (2009) Hox genes in neural patterning and circuit formation in the mouse hindbrain. Curr Top Dev Biol.; 88: 139–67
7) Greely H.T, Cho M.K, Hogle L.F, Satz D.M, (2007) Thinking About the Human Neuron Mouse, The American Journal of Bioethics 7(5): 27

FURTHER READING:

Sean B Carroll, Jennifer Grenier and Scott D Weatherbee, (2004) From DNA to Diversity, Wiley, ISBN: 978-1-4051-1950-4
Cynthia L. Hughes and Thomas C. Kaufman, Exploring the myriapod body plan: expression patterns of the ten Hox genes in a centipede
http://dev.biologists.org/content/129/5/1225.full#content-block
Shelly H. Wu. (2005). Chinese Astrology. Publisher: The Career Press, Inc. ISBN 1-56414-796-7
Theodora Lau, The Handbook of Chinese Horoscopes, Souvenir Press, New York, 2005

Claudia Westermann

VIENNA UNIVERSITY OF TECHNOLOGY, AUSTRIA
westermann@tuwien.ac.at

TOWARDS A POLY-VALUED LOGIC OF A REAL DREAM

"Selfhood is the foundation of all knowledge – as the foundation of permanence in change – as well as the principle of utmost diversity (You.) (Instead of the non-ego – You)" (Novalis, 2007, p. 151)

There are many tales about the world of Western logic which since Aristotelean times has not allowed for a "tertium datur" – a third option in between true and false – the shimmering grey. Somewhere/sometime was all we knew about the coexistence of contradiction, and all we knew about us was I.

I was given my position with the help of a secret bond – drawn as a line from me to somewhere/sometime/called-Being, to the many objects that I was able to grasp. There was no you beyond extension. Logically no us was given either. Paradise was placed on hold. It is by logic, that in this world – to which somewhere/sometime presented confirmation of all imperfection in the here and now – the prophets did not survive. The revelation of the secret bond logically proved fatal; for death presented a perfect solution – a double confirmation, not of the bond itself, but its necessity. Two constitutive tales also confirm the two-valued logical conclusion that progress is bound to efficiency.

When Socrates began his journey, he started from the Earth, travelled to the sometime/somewhere, and returned. Christ reduced the journey to half its distance by starting out in heaven. Two prophets left two symbols of necessity to the Western world – a glass of toxic liquid and a cross.

Hope ensured my being in the world. Yet, for the doubtful, hope was not. The next big tale that has shaped the Western world up until today came without a prophecy, but with increased efficiency. A mastermind of logic took the shortest journey he could take:

"Cogito, ergo sum." (I think, therefore I am.)
(Descartes, 2002)

Yes, I am – I am expelled from the world. Without relations, without future there is nothing left to say. To whom should I speak and how? This is the reality that has traced out my path: I am out! … Or, am I not?

"… we have got three elements once the subjectivity has set itself free from its self abandon and from the originally direct tie with Being. We have got firstly the representational existence of Being with the objects, in which it (Being) steps out as "World". We have got secondly the Cartesian ego that – in the act of reflexion – pulls itself out of the world onto itself. And thirdly we have got …" (Günther, 1957, p. 83)

We have seen many attempts to break the fatality of the Cartesian construction. Yet, in a society in which efficiency is key and has a long tradition, the shortness of his journey has always worked seductively. Since I could doubt everything but not myself while thinking, we live in a world of minds.

Today science shapes the world and the way we see it. It goes its way to prove that we are in, and not alone. True and false are valid. Time is gentle to us. Life is not endless, and thus we need just a little true that endures for a little while to be joyful again. If not, perhaps a poodle saves us – it is more gentle than it appears, less wise than it appears:

"Part of the part am I, which at the first was all, A part of darkness, which gave birth to light" (Mephisto in: Goethe, 1808)

We might surrender to the devil's voice. He knows the ifs and thens. If in fact the impetus of our striving is absolute knowledge, then signing his contract may be wise. For all those who have progressed from hope it might present a perfect short cut to a reality that is perhaps less gentle than it appears.

"Our heritage is not preceded by a testament."
(Char, 1999, p. 30)

I have entered the library a long time ago on this journey that never seems to end. Its construction is astonishingly unfamiliar to such an extent that any attempt to construct an image through description has always failed. All I can see is that it relates to itself as if in a dialogue. It is strangely unfixed and yet, I know, it will never fall apart. It looks as if it played a game that I cannot understand – constantly readjusting the elements that constitute the whole to create new relations within itself. However, I never witnessed the elements move.

It seems there isn't any order to the books' arrangement on the shelves – no order that I could identify. And even within the books, sometimes, I find strange motifs. There are books that know the myth of Babel before they know the myth of the Word. It is as if someone has turned history upside down, or taken a journey backwards and then traced it to a coordinate system of other dimensions.
One may think that we perceive when light is surrounded by shadow. This library, however, seems to emerge sometimes as if it was pure light.

And thirdly we have got a You, in which the same retreat is actualized objectively.

"[…] the same identical pulling out of the world is to be understood only in the ego as reflexion-in-itself in the real sense, i.e. as thinking […]"
(Günther, 1957, p. 83)

There is some truth in the mystic fairy tale that tells the story of a tower that is to be built higher and higher never to reach the heavenly beyond, but instead, to mark the beginning of misunderstanding. Many towers have been built up until today. There will be more. Yet, they may never reach beyond. They may never reach out to You – beyond a two-valued logic that has made objective Being coincide with subjective Thought. From this landscape You were logically excluded. Objectively one can conclude that misunderstanding was logically included.

> *"In the You appears the same retreat, that appears from the viewpoint of the ego as from 'me', as objective directed by a 'self-potency', thus as will or act of will." (Günther, 1957, p. 83)*

Within all construction, you are the unknown addressed to become creator and the author of a story that is hidden now but will emerge as yours to be told in a future present. Inhabitable theories exist in present time exclusively – exclusively constructed for you to perpetually arise. I have dissolved for a good reason – not on the basis of a necessity and not on the basis of will. I was complete before you. You are the creator of my absence and my reality.

> *"The You is an 'object of second order' that is capable to offset itself both from me (the ego) and from the world – the objects of first order. It is thus 'a Third, free from both'." (Günther, 1957, p. 83)*

The library is confirmation of a being-in-the-world. It plays a symphony of a higher order. Within it, there are reflections of a passage to a present that is still unknown: I have been created to always become what you desire me to be. I am the sole opportunity, a mere offer to you – to follow the traces that resonate your voice – your unknown voice. I do not wish to speak but your speech. I want to dissolve in your desires, want to be possessed, be made all your own. It is you – the unknown addressed – who is my orientation. I come as a perfect gift, without expectations. – All that which resonates, resonates in you.

> *"Today, we stand amidst the first emerging attempts to achieve a transition from the second metaphysics to a third metaphysical level of man. […] At the beginning of every new metaphysical epoch of man is the myth, which constructs the framework for the oncoming concrete history." (Günther, 1952, p. 238)*

You are.

REFERENCES

CHAR, R 1999, Hypnos: Aufzeichnungen aus dem Maquis (1943–44). Feuillets d'Hypnos (2nd ed.), (written in 1943/44; 1946 – st French edition), Frankfurt a.M.: Fischer Verlag

DESCARTES, R 2002, Principles of Philosophy (first published in Latin in 1644 as: Principia Philosophiae, translated to French during Descartes' lifetime – revised by Descartes), online: The Classical Library

GOETHE, J. W. v. 1808, Faust, Part I. online: Project Gutenberg

GÜNTHER, G. 1952, Kommentar zu Überwindung von Raum und Zeit. In G. Günther, ed. Überwindung von Raum und Zeit, Volume 3 of Rauch's Weltraum Bücher, Düsseldorf: Rauch Verlag, pp. 223–238

GÜNTHER, G. 1957, Idee und Grundriss einer nicht-Aristotelischen Logik (1957 – first edition, pagination acc. to the third ed.), Hamburg: Felix Meiner Verlag, Hamburg

Novalis 2007, Notes for a Romantic Encyclopaedia: Das Allgemeine Brouillon, (written in 1798/99), Suny Series, Albany, NY: State University of New York Press

Xiaoying (Juliette) Yuan

PHD CANDIDATE OF THE PLANETARY COLLEGIUM,
CAiiA, UNIVERSITY OF PLYMOUTH, UK

CHINA – LIVING IN BETWEEN REAL AND UNREAL

INTRODUCTION

The current presentation, as part of the author's PhD research on the topic of "Media Arts and Human Ecosphere", focuses on Chinese artists' research on the theme of "Reality".

We will track back to the genesis of the research on "Reality" in China, Virtual Reality (VR) technology, with an overview of the development of "State Key Projects" at major academies and institutions. By relating different artistic projects in Second Life's virtual platform, we will give an analysis on Chinese artists' investigation of "Real" and "Unreal", their search for identity and cultural roots, and their tendency to merge the real world with the virtual world by choosing to live online.

PART I: VIRTUAL REALITY IN CHINA

Chinese artists' investigation of "Reality" has emerged with the application of VR technology.

Developing VR technology, one of the "State Key Projects" in China, became an important research target in major universities during the past ten years. In the late 1980s, the first VR Engineering and Technology Center in China was established at the Northwestern Polytechnic University in Xi'an ushered in the beginning of VR technology research. In June 1990, the State Key Lab of CAD & CG in Zhejiang University successfully explored the first Chinese CAVE system. The Virtual Reality & Human Interface Technology Lab (VRHIT) of Tsinghua University applied VR technology in the analysis of human machine systems leading to improved system design and enhanced efficiency, safety, and usability of the system. The Harbin Institute of Technology oriented the research on the application of VR technology in emulation tests and environmental simulation in order to improve civil aviation and military affairs in China. Beijing University of Aeronautics and Astronautics (Beihang or BUAA) recently founded the State Key Laboratory of VR Technology and System focusing on virtual reality modeling theory and methods, augmented reality and human-computer interaction mechanisms, distributed virtual reality methods and technologies, and virtual reality platform for tools and systems.

Today VR technology is embedded in one's daily life with various applications in education, leisure, tourism, urbanism, medical treatment, e-commerce, and military affairs.

These "State Key Projects" in response to Chinese governmental policy of developing new technologies to advance Creative Industries and economic expansion are usually supported by stable national research funds and directed by governmental institutions and major academies. However, when talking about VR technology research in the fine arts field, the situation is totally different.

The dialogue between artists and scientists hasn't been officially established in current China. In BUAA, one of China's leading universities in VR technology research and nanoscience, inter-departmental exchange is almost nonexistent. Moreover, the likelihood for BUAA to adopt the concept of combining art, science, and technology is slim. Things appear better at Tsinghua University, the sponsor of the International New Media Arts Exhibition and Symposium, the largest in China. Tsinghua's Academy of Arts & Design recently inaugurated China's first Art & Science Media Lab (TASML) with the support of numerous internationally recognized institutions such as Parsons New School, V2, ZKM, and Ars Electronica. Nevertheless, it took more than two years for the project to be approved by the University's administration.

PART II: RESEARCH ON SECOND LIFE

The merger of art, science, and technology is so far for most artists in China a utopian dream. Even artists who teach in academies with access to government grants and cutting-edge equipment encounter numerous obstacles. Completed projects investigating the theme of "Reality" are quite limited.

CHINA TRACY: MAKING "UNREAL" REALLY "REAL"

Born in 1978 in Guangzhou, Cao Fei grew up during China's most important ten year reform period. Her camera captures young Chinese peolpe living in contemporary China dominated by a booming economy, information overload, and evolving technologies. In 2003, when Linden Lab launched the 3D virtual world Second Life, Cao Fei became the first Chinese artist to explore the virtual world through her avatar, China Tracy **(FIG. 1)**.

Since 2007, China Tracy has developed a fabulous life within Second Life that even her creator thinks is impossible to accomplish in reality. Today, China Tracy enjoys such a worldwide reputation in Second Life's virtual world that the opening ceremony of Cao Fei's famous project RMB City **(FIG. 2)** in Second Life, drew such avatar crowds that Cao Fei's Internet server was brought to a standstill! Meanwhile, in the real world, Cao Fei travels the world showing China Tracy's life (also her virtual life) by setting up exhibitions or multimedia performances. Cao Fei once complained of the exhibition set up being much easier in the virtual world than in the real world. By transposing every detail in real life to China Tracy (she even has a son in Second Life who has the same name as Cao Fei's real son), Cao Fei appears to be building a real life for her avatar, making the unreal really real.

FIG. 1: *China Tracy and China Sun in Second Life*

FIG. 2: *RMB city in Second Life*

FIG. 3: *Lily & Honglei, Paradise of the Assassins, Land of Illusion*

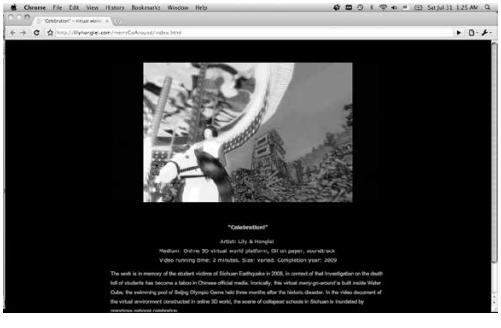


FIG. 4: *Lily & Honglei, Celebration!, Land of Illusion*

All images screen shot by author

SEEKING FOR THE LAND OF ILLUSION

Contemporaries of Cao Fei, Beijing media artists Lily & Honglei resurrected the culture and history of their motherland in Second Life's virtual space, while re-constituting it in a contemporary context in order to comment on the social problems in contemporary China. Behind their interest in blurring the line between real and unreal, is their search of identity and culture. In Lily & Honglei's "Land of Illusion – Reconstituting History and Culture in Online Virtual World" **(FIG. 3)** diverse social issues in contemporary China are discussed through symbolized objects and characters: the "great fire wall" symbolizing the cultural barrier, the "underwater city", being a virtual recreation of a real historical site near the Three Gorges Dam, where the female character roaming around the "underwater city" is the ghost of Xishi, a famous beauty in folk tales. The artists are not only appealing for the conservation of Chinese cultural heritage as the soul of the country but are also concerned about more universal themes such as religion and freedom. In episode IV "Celebration!" **(FIG. 4)**, a work in memory of the student victims the Sichuan earthquake in 2008, the year of the Olympic Games, a virtual merry-go-round is built inside a Water Cube where the Games were held three months after the historic disaster. The entire episode is an ironic allusion to China's official media blackout on the student death toll investigation during the period of the grandiose Olympic Games.

"SHAN ZHAI" AND ANTI-COPYRIGHTS IN CHINA

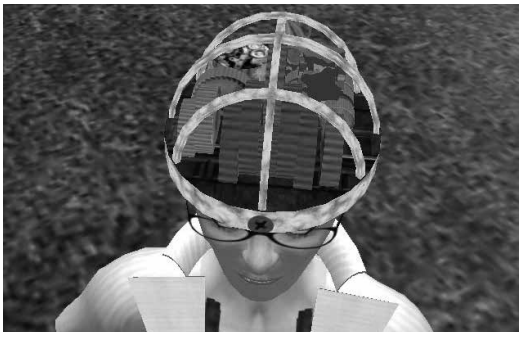
In another newly launched project, "Shan Zhai Village in Second Life", Chinese artist Sheng Jie and her collaborator, Stephanie Rothenberg from New York City tend to attack one of the most delicate issues in China – copyrights **(FIG. 5)**.

"Shan Zhai", or "Mountain Village" is an online term in China referring to Chinese knock-offs of brands, particularly electronics. "Shan Zhai Village" in Second Life is a store where people in the real world and avatars in the virtual world are invited to exhibit and sell their imitation products **(FIG. 6–7)**. The products could vary from common daily life commodities to the most extravagant inventions (for instance, a reproduction of ourselves with a totally surreal look). Real people and avatars are invited to expand their imagination by breaking with conventional definitions in order to make a total paradox and ironic "Anti-Copyright virtual world" that goes in parallel with the real world.

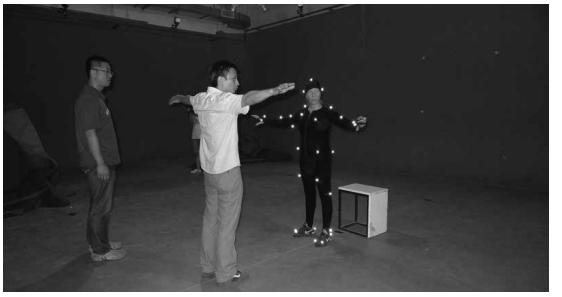
The project gained a lot of support from people in the real world during the artists' recent market research in one of the most dynamic areas of Beijing. 98 % of the people living in the area showed their strong willingness to purchase these future products when they saw their prototypes in the Second Life.

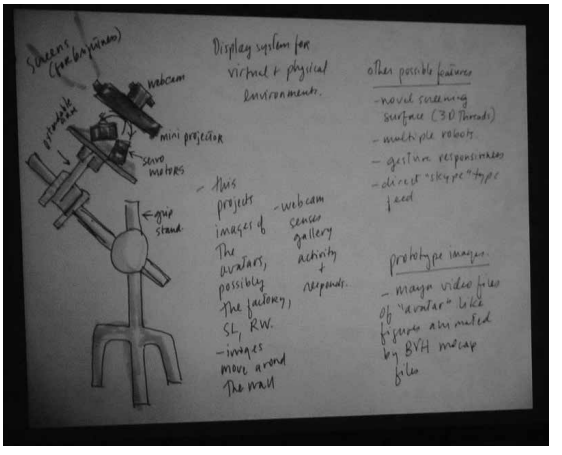
HYPOTHESIS IN MIXED REALITY

Second Life is becoming the best platform for Chinese artists to investigate the potentiality of the online space for artistic creations, as well their capacity to improve their real life by making the unreal real. Besides the low production cost and the full freedom of speech, Second Life also possesses the eventual power to influence the global economic structure and financial system of our time. The on-going collaborative Mixed Reality project between Beijing based artist Fei Jun and Toronto based artists Judith Doyle and Jim Ruxton is a good example.



FROM TOP
FIG. 5: *Shan Villa in Second Life*
FIG. 6: *Dr. Rothenberg in front of Shan Villa in Second Life*
FIG. 7: *Dr. Rothenberg with brain machine in Shan Villa*
All images: screen shots, courtesy of Stephanie Rothenbert





FROM TOP
FIG. 8: *Gesture cloud, gestures testing*
FIG. 9: *Gesture cloud, project draft*
All images courtesy of the artists

The project "Gesture cloud, at the intersection of physical and virtual environmental spaces in Toronto and Beijing" **(FIG. 8–9)** aims to explore the possibility of transferring gestures projected in the real world to a virtual environment, such as Second Life, where avatars convert the gestures, through their labors, into virtual money which will be used to purchase shares of a real world company. Profits from that company will return to the originator of the gestures.

The artists also planned a gallery exhibition event for which they will create a robotic arm that is in charge of collecting gestures from exhibition visitors, then transferring it into Second Life, making the interaction with the avatars' own gestures in the virtual world.

The most intriguing aspect of this project is the position of the virtual platform Second Life. The artists stated that Second Life actually was not the best virtual platform for their project. However, no other network service could meet the technical requirements of the project. When real life has to be supported by a virtual world as in the current project, the definition of real and unreal may require to be reexamined as well.

PART III: LIVING ONLINE

Along with the development of the Internet and all online network services, living online is considered the most "efficient" lifestyle in contemporary China especially by those born after 1970.

Beside the global network services such as Facebook, YouTube, Twitter, and Skype, China's young generation also favors the local products "Douban" (Bean Petal), "Sina MicroBlog", "Taobao" (Hit in the originals) and "Kaixin" (Happiness).

Established in March 2005, the social network service "Douban.com" **(FIG. 10)** has over 43,030,000 users and

LEFT-RIGHT
FIG. 10: *Douban* **FIG. 11:** *Sina MicroBlog* **FIG. 12:** *Taobao* **FIG. 13:** *Kaixin Farm*
All images screen shot by the author

170,000 groups [1]. The best way to show your dynamism as a social person in China is to set up an account on Douban, become a group administrator, and entertain your members with various activities. Having thousands of fans across the country gives young people a positive understanding about society and sometimes leads them to better opportunities in life.

Sina MicroBlog **(FIG. 11)** launched in October 2009 is another local network service created on the model of Twitter. Compared to Douban, it has the advantage of being supported by a large community of celebrities in entertainment, sport, culture and art. The visitors on Sina MicroBlog can access the celebrities' blogs, interact with them or forward their notes to other bloggers. Within one year, Sina MicroBlog successfully became the favorite network service of young Chinese. The service is frequently used by culture and art events organizers as an original way to have an interaction between celebrities and audiences. Different from Douban and Sina MicroBlog, Taobao **(FIG. 12)** is the Chinese version of "e-Bay" minus the auction function.

Although no longer considered as a favorite network tool by young Chinese, Kaixin, which appeared in 2007, caused a sensation in China, especially with its virtual game, Kaixin Farm (The Happiness Farm).

Reproduced originally under the model of Facebook, Kaixin carried out a series of virtual competition games that immediately gained a huge community of young people who, after work, rushed home to get an online parking place or labor to earn a luxurious house. The most famous game, Kaixin Farm **(FIG. 13)**, was even able to keep people up at night to compete with other Netizens by stealing "vegetables" and "plants" from their farms in order to exchange them for as much money as possible in their virtual life on Kaixin. The game gained such a huge following that for several months it received major Chinese media coverage with reports on its negative effects – people couldn't get up in the morning to attend work or school on time – which finally obligated the Chinese government to warn the company that created the game. Even with the restriction today, Kaixin still is the only Chinese virtual network service similar to Second Life although it can barely compete with it.

CONCLUSION

What is real? What is unreal? Today when living online became a vivid and consequential normality that comes to transform all non-existing matters into physical materials or phenomena, the border between virtuality and reality is blurred, and the definition of "Reality" needs to be re-examined as well.

Nevertheless, when elaborating the above topic within the context of China, we shouldn't neglect the big social environment that contemporary China is providing. The market economy that greatly improved China's economy and successfully awoke people's consciousness for capital, also appears to have transformed the whole country into

a land of fortune hunters. The recently launched "Creative Industries" policy which should have supported the art professions' evolution in China, became in reality another means of transforming art into a product in order to stimulate the economy.

Under such a social environment where fortune and power is more meaningful than life itself, it is actually not surprising to see people escape to the virtual world. As Cao Fei once said in her blog: "In the virtual world, we do not need to deal with so many people getting confused within such complicated relationship networks as in the real world." For artists living in China, relying on creations for their livelihood is challenging; for those who try to explore the blurring lines between art, science, and technology, the challenge is still tougher. Knowing how to deal with the specific Chinese policy on art and culture is already the most important art – that of survival. Taking advantage of science and technology to strengthen one's artistic profession is definitely unreal for most of the artists still struggling in China.

NOTES

1) Statistic showed on July 28th, 2010 on Douban.com.

REFERENCES

[1] Ling CHEN, "New Media Art History", ed. Tsinghua University Press, 347p, 2007
[2] Yanxiang ZHANG, "New Media Art", ed. Science Publishing House, Beijing, 313p, 2005
[3] Zhigeng PAN/Jiaoying SHI/Qin LU, "Virtual reality and its applications in China: An overview", The International Journal of Virtual Reality, Vol.4, No.3 (2000), p1-2/20, 2000
[4] Wang Shanshan, "Sina MicroBlog seeking for new path", New Century Weekly, June 28, 2010
[5] Stephanie Rothenberg in Second Life: artist's projects documentation and the current presentation author's interview on the artist in Beijing, China
[6] Fei Jun, Judith Doyle and Jim Ruxton's residency in CAFA, visit and interview by author of the current presentation
[7] Ho Kiu-Chor, A Case Study of Douban: Social network communities and Web2.0 in China, 2006
WEB URLs:
[1] Zhejiang University: http://www.zju.edu.cn
[2] State Key Lab of CAD & CG, Zhejiang University: http://cad.zju.edu.cn
[3] Virtual Reality & Human Interface Technology Lab, Tshinghua University: http://www.ie.tsinghua.edu.cn/~zhangwei/vrhit/english.htm
[4] Tsinghua Art & Science Media Laboratory: http://tasml.parsons.edu/
[5] Beijing University of Aeronautics & Astronautics (Beihang): http://ev.buaa.edu.cn/
[6] Networked Media Seminar by Christiane Paul: http://www.intelligentagent.com/SVA/
[7] Second Life http://secondlife.com
[8] Cao Fei and Seond Life project: http://www.alternativearchive.com/chinatracy/article.asp?id=7 (Cao Fei's blog)
[9] Lily & Honglei – New Media Art from China: http://lilyhonglei.com http://ps1.org/studio-visit/artist/lily-amp-honglei-li http://virtual worldart.ning.com/lilyhonglei
[10] Sina MicroBlog: http://t.sina.com.cn http:www.sina.com.cn
[11] Taobao: http://www.taobao.com http://www.alibaba.com
[12] Kaixin: http://www.kaixin.com http://www.kaixin001.com

BIOGRAPHIES

Julieta Aguilera

Julieta Aguilera has been interested in how we navigate space visually since she studied Design at the School of Architecture, Universidad Católica de Valparaíso, Chile. She later earned a Master of Fine Arts (MFA) from the University of Notre Dame, where she studied Design and Virtual Reality. Julieta Aguilera holds a second MFA in Electronic Visualization from the University of Illinois, Chicago, where she was part of the Electronic Visualization Laboratory (EVL) collaborative program in Art and Computer Science. At EVL, she studied real-time stereo networked virtual environments, computer graphics, games, knots and higher dimensions. She is member of the Space Visualization Laboratory at the Adler Planetarium in Chicago since 2007, and a PhD candidate at the Planetary Collegium (CAiiA), Plymouth, since 2010.

Inês Albuquerque

Inês Albuquerque is a researcher and PhD Student in Art Studies at the Department of Communication and Art, University of Aveiro, Portugal. Her research is focused on Contemporary Art and Art, Science and Technology.

Dr. Hava Aldouby

Dr. Hava Aldoby lectures on film as visual art at the Hebrew University of Jerusalem, Faculty of Humanities – School of the Arts. She is currently completing a book on Federico Fellini under the working title: *Painting In Film, Painting On Film*. The book reveals the elaborate art-historical matrix underlying Fellini's middle period films, and his conception of painting as origin. Her current research interests include the film-painting interface, relations between electronic (or digital) art and painting, and the various intermedial hybrids that ensue. Particular interest is given in her research to the quest for the real in the visual arts of the postmodern era.

Peter Anders, PhD

Peter Anders (USA) is an architect, educator, and information design theorist. He is Planning and Development director of the Planetary Collegium, Design Director at Dow Howell Gilmore Associates, Architects, Michigan, the Officer – Secretary of ISEA International (Inter-Society for Electronic Arts), and Advisory Board Vice-Chair of Alden B. Dow Museum of Science and Art, Midland, Michigan. He has published widely on the architecture of cyberspace and is the author of Envisioning Cyberspace (1998, McGraw Hill), which presents design principles for on-line spatial environments. Anders received his degrees from the University of Michigan (BS 1976), Columbia University (MA 1982), and the University of Plymouth (PhD, 2004). He was a principle in an architectural firm in New York City until 1994 when he formed MindSpace.net, an architectural practice specializing in media/information environments. He has received numerous design awards for his work and has taught graduate level design studios and computer-aided design at universities, including the New Jersey Institute of Technology, University of Detroit-Mercy, and the University of Michigan. His work has been featured in professional journals and he has presented his research on the architecture of cyberspace in several international venues, including The New York Architectural League, Xerox PARC, ISEA, CAiiA, Cyberconf, ACADIA, AEC, ACM-Multimedia, InterSymp and the World Future Society.

Kęstutis Andrašiūnas

Kęstutis Andrašiunas was born in 1973. He studied philosophy at Vilnius University and sculpture at Vilnius Academy of Art. He is working in digital arts, Internet, programming art. He co-founded Institutio Media (o-o.lt) in Vilnius in 1998 – a virtual space; it is an attempt to transfer the structure of an institution to the Internet and study its functioning. The work of Kęstutis Andrašiunas has been exhibited in London, Helsinki, at the Hannover Expo and in Vilnius, Lithuania.

Kathrine Elizabeth Anker

Kathrine Elizabeth Anker is a cultural theorist, and an independent researcher. She holds a Master in Modern Culture and Cultural Communication from the University of Copenhagen, and is a PhD student at the CAiiA-Hub, Planetary Collegium, Plymouth University. Her current project is concerned with questions on how artistic augmented reality interfaces can be seen as communicational forms that appeal to transformed ways of understanding the human subject. Her work is transdisciplinary, philosophical and speculative. Kathrine is also educated as a Pedagogue of Music and Movement, with a special emphasis on the relation between sensory-motor skill, perception and intellectual processes in learning situations.

Artifist:

CAROLINE COTTEREAU: licenced in art and philosophy. Art school Montpellier (dao, photography, drawing) France (1989–93). Self-taught tattoo artist with 20 years of practice; painter. Interested in sign and symbol, rites and psychology in tattooing (shamanic process).
GAËTAN MEURÉE-COTTEREAU: licenced in biology; self-taught in Ethno-pharmacology and Art. Shamanic and psychonautic therapist.
VALERY MEURÉE: BA (hons.) Mixed Media Art, University of Westminster, London (1997–2001); BA (hons.) New Genre (candidat), SFAI, San Francisco (1996–1997). Video Editor and Photographer.

Roy Ascott

Roy Ascott's research is invested in cybernetics, technoetics, telematics, and syncretism. He is the founding president of the Planetary Collegium, based in Plymouth University with nodes in Milan and Zurich. He has held

senior academic positions in San Francisco, Minneapolis, Vienna and Toronto, and is an Honorary Professor of Aalborg University Denmark, and Thames Valley University London. His international exhibitions range from the Venice Biennale to Ars Electronica. Most recently a comprehensive survey of his work was exhibited in Korea at the Incheon International Festival of Digital Art in 2010. His theoretical work is widely published, translated and referenced. He has advised media art institutions in Europe, Australia, South America, the USA, Japan, and Korea. He edits Technoetic Arts (Intellect) and is an Honorary Editor of Leonardo.

Elif Ayiter

Elif Ayiter (Turkey), aka. Alpha Auer in Second Life, is an artist, designer and researcher specializing in the development and implementation of hybrid educational methodologies between art & design, and computer science. She is an Associate Professor at Sabanci University in Istanbul, Turkey. Her research interests include data visualization and the development of Kinesthetic/Somatic/Biological interfaces for the metaverse, in collaboration with teams of computer scientists. She has presented creative as well as research output at conferences including Siggraph, Consciousness Reframed, Creativity and Cognition, ICALT and Computational Aesthetics (Eurographics). She is currently undertaking doctoral research at the CAiiA-Hub of the Planetary Collegium at the University of Plymouth. Alpha Auer is a totally irreverent, mischievous, politically incorrect, frivolous, fashion victim, avatar in Second Life, whose blog entries can be viewed at http://alphaauer.wordpress.com.

Marco Bischof, PhD

Marco Bishof is a lecturer and member of the scientific staff, Institute for Transcultural Health Sciences, European University Viadrina, Frankfurt (Oder), Germany, and President of the International Institute of Biophotonics, Neuss, Germany. Author of *Biophotons – the Light in Our Cells* (in German, 1995), *Tachyons, Orgone Energy, Scalar Waves – Subtle Fields between Myth and Science* (in German, 2002), *The Crystal Planet* (in German, 2008), and *Salutogenesis – on the Way to Optimal Health* (in German, 2010).

Pier Luigi Capucci

Since the early 1980s Pier Luigi Capucci has been concerned with communications studies, new media and new art forms, and with the relations among arts, sciences and technologies. Currently he is professor at the University of Urbino, at the NABA – Milan, and other institutions. He is supervisor of the M-Node PhD Program of the Planetary Collegium, University of Plymouth. In 1994 he founded and directed the first italian online magazine, NetMagazine, later MagNet, and a research project on the relations between culture and technologies made in conjunction with the universities of Bologna and Rome: “La Sapienza”. He is founder and director of Noema (www.noemalab.org), a website devoted to culture/new technologies interrelations and influences (since 2000). He is founder and director of <mediaversi> (www.mediaversi.it) since 2004; a book series focused on new media and society, with an international Scientific Committee.

Claudia Cardoso-Fleck

Claudia Cardoso-Fleck is an independent artist and PhD candidate & researcher at the CAiiA-Hub, Planetary Collegium, based in Plymouth, UK, with an MFAæ in Computer Art from the School of Visual Arts, NY. She holds a senior adjunct position at SUNY Westchester Community College, Valhalla NY, and is a principal at Cardoso-Fleck Graphic Design Inc.

Alexander Ćetković

Alexander Ćetković is a multidisciplinary architect and computer scientist. With a master’s degree in both disciplines, he worked as software engineer on major projects and as architect on many designs and contests. For seven years he taught at the Faculty of New Media, University of Arts and Design in Zürich, Switzerland, in the fields of Urban Media, Perception of Space, Information Spaces and Programming Techniques. At the moment he is working on multidisciplinary projects challenging his wide range of knowledge, like the ideas-contest “ETH-World” and the platform “Archivio Fluido”. He is a PhD Candidate at the Planetary Collegium.

Jacques Chueke

Jaques Chueke graduated in Design/Visual Communication (1998), specialized in Interface Usability in 2002 and holds a Master in Design (2005) from PUC-Rio. For the last ten years he has been working on developing projects for Internet and Software. Recently he has been Digital Media Supervisor in Quality Software (RJ-Brazil), coordinating a design team on several projects for large companies. He is teaching Interface Usability (postgraduate course) at PUC-Rio, among other institutes. He is also an adjunct teacher in Digital Image (vector and bitmap) undergraduate studies at PUC-Rio. In 2009 he started a PhD in i-DAT, Faculty of Arts, University of Plymouth.

Dr. Geoff Cox

Dr. Geoff Cox is currently a Researcher in Digital Aesthetics as part of the Digital Urban Living Research Centre at Aarhus University (DK). He is also an occasional artist, writer, and Associate Curator of Online Projects, Arnolfini, Bristol (UK), adjunct faculty, Transart Institute, Berlin/New York (DE/US), and Associate Professor, University of Plymouth (UK) where he is part of KURATOR/Art and Social Technologies Research group. Amongst other

things, he is a founding editor for the DATA Browser book series (published by Autonomedia, New York), and co-edited *Economising Culture* (2004), *Engineering Culture* (2005) and *Creating Insecurity* (2009).

Blanka Earhart

Blanka Earhart is a cultural producer based in Los Angeles, California. She is an internationally exhibited artist and writer, occasionally teaching and speaking on art and visual culture. Blanka is an owner of a multimedia company specializing in media-rich solutions existing on the intersection of web, television and games. Her work and writing oscillates around issues concerning the perception and role of self vis a vis technology, human agency and its limits, social media, and other human exploits seen through the lens of phenomenology. Blanka received her MFA from the department of Art Theory and Practice at Northwestern University Evanston, Illinois in 2003 and her BFA from the School of the Art Institute of Chicago in 1999. She was a recipient of the University Fellowship in the Graduate School at Northwestern University in 2001 and 2002.

Heinrich Falk, PhD

Heinrich Falk is Associate Professor at Aalborg University, Denmark. He is affiliated with the research group and educational program "Art and Technology". He teaches digital aesthetics, interactive dramaturgy and artistic methodology. He has worked as an actor and theatre director, and his theoretical investigation continues to develop in close relation to practical, artistic work. His current research interest is "performative aesthetics", and his work – focusing on notions of affect, presence, beauty and communication – attempts to create bridges between certain discourses in the human sciences, sociology, engineering, and neuroscience. He is author of the book *Interaktiv digital installationskunst – teori og analyse* (2008).

Matthew Fielder

Matthew Fielder is an artist, writer and educator who works in a variety of mediums and disciplines. He holds a BFA in Fine Art and an MA in the program of Aesthetics and Politics form the California Institute of the Arts. In 2009 he spoke as part of the panel "Theatricality As Political Material" at the International Conference for the Pedagogy of the Theater Of The Oppressed.

Maria Luiza Fragoso

Maria Luiza Fragoso is a multimedia artist from Rio de Janeiro, professor at University of Brasília from 1993–2009, and professor at Federal University of Rio de Janeiro since February 2009. She coordinates the research group REDE since 2004. Fragoso organized and published *Computer Art in Brazil* (*Arte Computacional no Brasil*) in 2005. Papers published in artistic journals; participations in national and international exhibits.

Martha Gabriel

Martha Gabriel is professor and leader of the e-learning program "Widening Boarders" at University Anhembi Morumbi. She is Professor of the MBA courses at BSP Business School São Paulo and Federal University of Parana, Brazil; curator of Upgrade! São Paulo (www.upgradesaopaulo.com.br); reviewer for LEA Leonardo Electronic Almanac in 2005, and for Networked Book, Turbulence.org, 2009; engineer; postgraduate in Marketing and in Graphics Design; Master's Degree in Art; pursuing her doctorate degree at USP (University of São Paulo) researching cross-media art. As Artist and Speaker, she has presented artworks and papers in events like Consciousness Reframed (Beijing, Plymouth, Vienna); SIGGRAPH (2005, 2006 & 2009); CHI; INTERACT; ELO Electronic Literature Conference; ISEA (2008 & 2009); Chain Reaction; Campus Party Brazil; SCANZ; Mobilefest; Florence Biennale 2009 (awarded); Technarte 2010; among others. Author of two books and several papers and articles in art & technology magazines, including Leonardo, Transactions, April 2008, Vol. 41, No. 2, Pages 114–115.

Espen Gangvik

Espen Gangvik is a Norwegian sculptor and curator. He graduated from Trondheim Art Academy in 1984. Gangvik has participated in numerous group exhibitions at home and abroad. He is represented in many public collections, and has since 1986 undertaken a number of commissions, including "Trinigon", the national monument of liberty in Narvik. "Objects from an altered existence", 2007, at Trondheim Art Museum, was his up to now last solo exhibition. In 2002 he founded TEKS – Trondheim Electronic Arts Centre, which aims to facilitate the production and dissemination of art that utilizes new technologies, and he is currently General Manager of the foundation. TEKS organized the festival "Trondheim Matchmaking" of electronic arts and new technologies from 2002 to 2009, with Gangvik as main curator. In 2010 he is curating the new biennial for art and technology in Trondheim, Meta.Morf – New.Brave.World!.

Luis Gustavo Bueno Geraldo

Luis Gustavo Bueno Geraldo is a teacher at the Technology College of São Paulo (Fatec-SP) in São Paulo, Brazil. He graduated in Graphic Design at the University of the State

of São Paulo and holds a Master in Visual Arts from the University of São Paulo. Besides his teaching occupations, he works with graphic design, electronic art and urban interventions. He is also member of the Digital Poetics Research Group, University of São Paulo.

Dr. James K. Gimzewski

Dr. James Gimzewski is Distinguished Professor of Chemistry at the University of California, Los Angeles; Director of the Nano & Pico Characterization Core Facility of the California NanoSystems Institute; Scientific Director of the Art|Sci Center and Principal Investigator and Satellites Co-Director of the WPI Center for Materials NanoArchitectonics (MANA) in Japan. He was formerly a group leader at IBM Zurich Research Laboratory, researching in nanoscale science and technology for more than 18 years. Dr. Gimzewski pioneered research on mechanical and electrical contacts with single atoms and molecules using scanning tunneling microscopy (STM) and was one of the first persons to image molecules with STM. His accomplishments include the first STM-based fabrication of molecular suprastructures at room temperature using mechanical forces to push molecules across surfaces, the discovery of single molecule rotors and the development of new micromechanical sensors based on nanotechnology, which explore ultimate limits of sensitivity and measurement. This approach was recently used to convert biochemical recognition into Nanomechanics. His current interests are in the nanomechanics of cells and bacteria where he collaborates with the UCLA Medical and Dental Schools. He is involved in projects that range from the operation of X-rays, ions and nuclear fusion using pyroelectric crystals, direct deposition of carbon nanotubes and single molecule DNA profiling. Dr. Gimzewski is also involved in numerous art-science collaborative projects that have been exhibited in museums throughout the world.
http://www.chem.ucla.edu/dept/Faculty/gimzewski/

Luis Miguel Girão

Luis Miguel Girão is a transdisciplinary artist and researcher in the application of technology as a tool for artistic expression, at the moment focusing on bioelectromagnetics. In 2007, he was awarded the Bolsa Ernesto de Sousa prize. Along with Gehlhaar and Paulo Maria Rodrigues, he formed the UnoDuoTrio ensemble and developed the CyberLieder project. He founded Artshare, an art tech research company, and collaborates with several artists and institutions such as Casa da Música – Porto, iDAT – Plymouth (UK) and Companhia de Música Teatral – Lisbon. He was assistant curator and technical director of the Electronics Art Lab at the Bienal Internacional de Cerveira, Portugal, and collaborated with the Academia das Artes Digitais of the Aveiro Digital Programme, also in Portugal. He collaborated with several artists, and his work has been presented in countries such as USA, Canada, Germany, Denmark and China. He is a PhD candidate at The Planetary Collegium; fellow at the Foundation for Science and Technology, Lisbon; and fellow at CESEM, Universidade Nova, Lisbon.

Charlotte Gould

Charlotte Gould has developed a number of interactive environments that explore user identity and the notion of a floating narrative. She is currently developing location specific work in which the user becomes an active participant in the narrative and explores methods of user driven content. Charlotte Gould has developed projects for the BBC Big Screen in Liverpool, the Glastonbury Festival and the ISEA 2009 Belfast, she has presented at ISEA 2008 Singapore and at DAC09 in California.

Jane Grant

Jane Grant is an artist who works with moving image, sound, installation and drawing. Her work often draws on scientific ideas, both contemporary and historical. Solo exhibitions have included “Memento Mori”, at Spacex Gallery, Exeter, “Still at Chapter”, Cardiff, “Aufstiegen”, a site specific work in Germany and “Leaving Eart” at Peninsula Arts Gallery, University of Plymouth. Her collaborative work with scientists, musicians, composers and designers have resulted in award winning projects, including “The Fragmented Orchestra” with John Matthias and Nick Ryan, which was winner of the PRSF New Music Award and received an Honorary Mention at Prix Ars Electronic 2009. She is currently working on a number of NeuroArts projects, including the development of “The Fragmented Orchestra”. Her forthcoming individual projects include new works on the effects of the sun’s forthcoming solar storm in 2012 and an artist’s film regarding dark matter. Jane Grant is Associate Professor (Reader) in Digital Arts at University of Plymouth, UK.

Dew Harrison, PhD

Dew Harrison is a researcher and practitioner in digital and computer mediated art. Currently working as the Associate Dean for Research and Postgraduate Studies at the School of Art & Design, University of Wolverhampton, where she is the Director of the CADRE Research Centre (Centre for Art and Design Research and Exerimentation). She is also a co-director of Labculture Ltd, PVA MediaLab, Dorset UK, which is an artist-led organisation initiating and supporting exploratory work as good practice in creative new media. Within her own practice she undertakes a critical exploration of Conceptual Art, the non-linear thought trails permissible in semantic media, and intuitive interfaces. She often works collaboratively and considers curation a form of virtual media art practice. Dew has both Science and Art Master’s Degrees and a PhD from CAiiA in Interactive Art, with over 40 publications to date she continues to show her work both nationally and internationally.

Salvatore Iaconesi

Salvatore Iaconesi is an artist, a hacker, an electronic musician, and an expert in technologies for mobile devices, wearable and ubiquitous computing, robotics, artificial intelligence, interactive devices, interfaces and environments,

information systems and geographic, location based systems. Salvatore creates interactive experiences, breakthrough technological services and interactive systems, for art, communications, entertainment, design, utilities. A focus on ethics, sustainability, ecology, multi-cultural tolerance and on the values and opportunities created by differences are a constant focus of all of his work. Salvatore teaches Digital Cultures, Interaction Design, Innovation, Electronic Engineering, in several universities (Rome, Milan, Denmark, Mexico).

Eiko Ikegami, PhD

Eiko Ikegami is Professor and Chair of the Department of Sociology, New School for Social Research in New York. (PhD Sociology, Harvard University) She is currently leading a group of virtual ethnographers who study organizational and cultural dynamics of various communities of avatars in Second Life. Ikegami's Project, "Virtual Civility, Trust and Avatars: Ethnology in Second Life" is supported by National Science Foundation (IIS 0942997). Her publications include, *Bonds of Civility: Aesthetic Publics and the Political Origins of Japanese Culture* (2005: Cambridge University Press), which won five book awards.

Dr. Margarete Jahrmann

Margarete Jahrmann is an artist, Professor for Game Design at the University of Arts Zurich and researcher on the HERA project Pervasive Prosumer Plays / FLOW at the University of Art dieAngewandte Vienna. As an internationally renowned artist, she has been exhibited worldwide over the last ten years (2010 Digital art weeks, Xian; Space Invaders, FACT Liverpool / game.Art, NEMK Amsterdam; 2009 Tales of Play, Alta Tecnología Andina Lima; Enter_ Act, Kunstmuseum Aaros; 2008 Arco/Laboral Gijon, SESC / File Sau Paolo; 2007 DIGRA Tokyo) and received major media arts awards, such as the distinction in interactive arts, PrixArsElectronica 2003; and software arts award, Transmediale, Berlin 2004. In 2006 she founded the international arts research association Ludic Society, and since then edits the LS magazine. In 2010 she submitted her doctoral thesis on *Ludics – The Art and Politics of Play* at the University of Plymouth, CAiiA *Centre for Advanced Inquiry in Integrative Arts*. Her research focus lies on *Play* as research method, political activism and subversion and hybrid forms of intervention by arts. She frequently curates and publishes in the field of electronic network arts and critical culture.

K. J. Karoussos

Katerina Karoussos is an artist and researcher. Her research is based on the convergence of old and new media and especially between Byzantine and ICT visual practices. From 1994 to 2003 she was the director and a cofounder of the Hellenic Center of Fine & Applied Arts. Since 2004 she is working at The Athens School of Fine Arts as a freelancer at the Fresco studio, and she is member of the Planetary Collegium (CAiiA) as a PhD Candidate under the supervision of Prof. Roy Ascott. Apart from her work as a Byzantine mural painter at Orthodox churches, her work has been exhibited in various international media exhibitions.

Max Kazemzadeh

Max Kazemzadeh is an electronic and emergent media artist and tenure-track Assistant Professorship of Art & Media Technology at Gallaudet University, the only all deaf university in the world. Kazemzadeh is also a PhD Candidate within the Planetary Collegium. His work over the last ten years focuses on how constructed, semi-conscious interfaces influence human interaction, and is presently investigating the effects of directed thought on the realm of the physical through what he calls "re-falsifications" (ie. creative experiments) to reveal more concrete reflections of what is reality. Kazemzadeh has served on panels, curated exhibitions, organized conferences, given workshops, received grants, written articles, given performances, and exhibited internationally in the area of electronic and emergent media art. Some exhibitions include the Microwave Festival (Hong Kong), the Boston CyberArts Festival, Medialab-Prado's Interactivos 08 (MexicoCity), Dashanzi International Art Festval (Beijing), IDMA IDEA's Exhibition/Symposium (Ohio), Fotofest (Houston), Macedonia Museum of Contemporary Art (Greece), Maker Faire (Austin), LA Center for Digital Art (Los Angeles), The Gerald Peters Gallery (NYC), and the Dallas Center for Contemporary Art (Texas). Kazemzadeh organized the conference Texelectronica '06 (Dallas), served as the chair of the electronic media art session at the College Art Association-CAA '08, served on the Creative Capital Foundation's Artist Grant Review Committee in '08, served as a juror for SIGGRAPH '07, and has given annual interactive hardware/software workshops at the Central Academy of Fine Art in Beijing since 2004.

Rachel Kessler

Rache Kessler is a visual artist who uses diverse media and methods including painting, sculpture, video, text and performance. She holds a BFA from California Institute of the Arts and an MFA from Art Center College of Design. She was also a 2009 Joan Mitchell Foundation nominee. Her work has been exhibited in group and solo shows.

Linus Lancaster

Linus Lancaster is an instructor of visual art and photography at Healdsburg High School in Northern California, as well as being a working artist and independent scholar. He is the founder of the International LandBuoy Project, a collaborative performance and sculpture project dedicated to interventionist practice which has focused on theories and politics of Land and location. Linus joined the Planetary Collegium in 2009 and is working towards a PhD in philosophy and art practice, currently with an emphasis on theories of post-humanism and ecology of Soil.

Renata La Rocca

Renata La Rocca is a PhD researcher at ECA/USP – University of São Paulo, School of Communications and Arts, she is member of the Art, Design and Digital Media group, headed by her research supervisor, Professor Mônica Tavares. La Rocca holds a master's degree in Architecture, obtained in 2006 at SAP/EESC/USP, University of São Paulo, School of Engineering of Sao Carlos, Department of Architecture. She is teacher and head of the Interior Design course, and teacher on the Graphic and Product Design courses at the FAAL. She is member of the The Double collective, her research interests relate to the construction of spatial narratives in interactive digital art installations by using mnemonic structures.

Živa Ljubec

Živa Ljubec is an independent architect and researcher in the intersection area of art/science/consciousness. She studied architecture at Faculty for Architecture and mathematics at Faculty for Mathematics and Physics, both at the University of Ljubljana, from which she obtained her master of architecture degree in 2004. She is currently exploring the intuitive realm, she claims is shared by artist and scientists, as a PhD Candidate at CAiiA (Centre for Advanced Inquiry in the Interactive Arts) at University of Plymouth. The research into intuitive medium that is navigated differently in diverse cultures (from ancient indigenous to current scientific culture) is conducted under Roy Ascott's supervision in collaboration with James Gimzewski as the second supervisor. The variety of experiences and skills acquired from studying architecture as well as mathematics gave Živa insight into the intuitive approach in both artistic and scientific problem solving before the solution is intellectually manifested by means of expression specific to the discipline at hand. The by-product of her search for traces of uncensored intuition in arts are her art reviews, that compare the artistic inquiries with the latest theories in science. She is interested in merging artistic and scientific approaches to reveal further the extents of the consciousness we are part of as humans.

Dr. Luis Eduardo Luna

Luis Eduardo Luna (Brazil) was born in Florencia, in the Colombian Amazon region. He studied Philosophy and Literature at the Complutense University of Madrid. He earned an interdisciplinary master's degree, while also teaching Spanish and Latin American at the University of Oslo. In 1979 he moved to Finland where he is currently a Senior Lecturer at the Swedish School of Economics, Helsinki. In 1989 he received a PhD from the Institute of Comparative Religion at Stockholm University, and in 2000 an honorary doctorate from St. Lawrence University, Canton, New York. A Guggenheim Fellow and Fellow of the Linnean Society of London, he is the author of *Vegetalismo: Shamanism Among the Mestizo Population of the Peruvian Amazon* (1986), and with Pablo Amaringo of *Ayahuasca Visions: The Religious Iconography of a Peruvian Shaman* (1991). In 1986 he co-founded with Pablo Amaringo the Usko-Ayar Amazonian School of Painting of Pucallpa, Peru. He was Professor of Anthropology at the Federal University of Santa Catarina, Brazil (1994–1998), has lectured about Amazonian shamanism and modified states of consciousness worldwide, and has curated exhibitions of visionary art in several countries. Dr. Luna has over 30 years of experience with *ayahuasca* in various contexts: as an anthropologist with indigenous groups and among urban and rural mestizo *ayahuasqueros* in Peru and Colombia, with all the syncretic Brazilian religious organizations that use *ayahuasca* as a sacrament, and as a facilitator in specially designed workshops.
http://www.wasiwaska.org/wo_luiseduardo.htm

Dr. Roger Malina

Roger Malina is an astronomer and editor. He is currently member of the Observational Cosmology Group of the Laboratoire d'Astrophysique de Marseille and Director of the Observatoire Astronomique de Marseille, Provence. His specialty is in space instrumentation; he was the Principal Investigator for the NASA Extreme Ultraviolet Explorer Satellite. For over 25 years, he has been involved with the Leonardo organization, whose mission is to promote and make work that explores the interaction of the arts and sciences and the arts and new technologies visible. He is Executive Editor of the Leonardo Publications at MIT Press. More recently he has helped set up the Mediterranean Institute for Advanced Studies (IMERA) and is co-chair of the ASIL (Arts, Sciences, Instrumentation and Language) Initiative of IMERA, which hosts artists in residence in scientific research laboratories of the Marseille region.

Ryohei Nakatsu, PhD

Ryohei Nakatsu is Professor at the National University of Singapore and director of the Interactive & Digital Media Institute (IDMI). He received BS, MS, and PhD degrees in electronic engineering from Kyoto University in 1969, 1971, and 1982, respectively. After joining NTT in 1971, he mainly worked on speech recognition technology. In 1994, he joined Advanced Telecommunications Research Institute (ATR) as the President of ATR Media Integration & Communications Research Laboratories. From the spring of 2002, he has been a Professor at School of Science and Technology, Kwansei Gakuin University. At the same time, he established a venture company, Nirvana Technology Inc., and became a President of the company. His research interests include emotion extraction from speech and facial images, emotion recognition, nonverbal communications, and integration of multimodalities in communications. He received the Best Paper Award from the IEEE International Conference on Multimedia Computing and Systems (1996); Telecom System Award from Telecommunication System Foundation (1999 and 2000); the Best Paper Award from Virtual Reality Society of Japan (1999, 2000, and 2001); and the Best Paper Award from Artificial Intelligence Society of Japan (2000). He is a Fellow of the IEEE and the Institute of Electronics, Information and Communication Engineers

Japan (IEICE-J). He is the Japanese representative at the International Federation of Information Processing.
http://www.idmi.nus.edu.sg/ourpeople/prof_nakatsu.htm

Enrico Nardelli

Enrico Nardelli is a full professor of Computer Science at the University of Roma "Tor Vergata", affiliated with the Department of Mathematics. He is the national coordinator of a two-years research projects on bio-informatics, financed by the Italian Ministry of University. Nardelli has been the President of GRIN, the Italian Association of University Professors of Computer Science (2003–08). Since September 2008 he is on the Executive Board of Informatics Europe, the association of computer science departments and research laboratories in Europe and neighboring areas. June–July 2007 the Academy of Finland invited him along with seven other international Computer Science experts to evaluate Computer Science research in Finland in the years 2000–2006. He recently started working on the intersection between informatics and other disciplines, thinking that it is of the utmost importance for the future of informatics to show how it can be beneficial to, and benefit from, other cultural areas.

Simeon Nelson

Simeon Nelson is Professor of Sculpture at the University of Hertfordshire. He was a finalist in the National Gallery of Australia's National Sculpture Prize in 2005 and in the 2003 Jerwood Sculpture Prize. Passages, a monograph was published by The University of New South Wales Press, Sydney in 2000. Recent exhibitions include Crytposphere, Royal Geographical Society, London, 2008 and Objet Perdu, Plataforma Revolver, Lisbon, 2010. Awards include arts council grants in Australia and the UK, Pollock-Krasner Fellowships in 2000 and 2009, and a Leverhulme grant in 2007. Australian representative to the IX Triennial India, New Delhi, 1997. Major commissions include Ben Chifley, Sydney, Desiring Machine, Melbourne; Cactal, the University of Teesside, UK; Proximities, Melbourne and Flume, Ashford, Kent, UK. Work is represented in the Art/Omi Foundation, New York, the Jerwood Foundation, London, the Museum of Contemporary Art, Sydney the National Gallery of Australia, Canberra and the Cass Sculpture Foundation, UK.

Jennifer Kanary Nikolov(a)

The independent artist Jennifer Kanary Nikolov(a) studied fashion design from 1994–1998 before graduating with the first version of roomforthoughts from the fine arts department of the Maastricht Art Academy in 2000. She continued with a Master's program at the Sandberg Institute in Amsterdam, which she completed in 2002. Afterwards, she was invited to participate in the first experimental curating course initiated by the University of Amsterdam and the Sandberg Institute. Jennifer Kanary has participated in several art and science projects. From Nov. 2007 to April 2008 she has been artist-in-residence at the National Psychiatry Museum in Haarlem, Netherlands. She is currently a PhD Candidate of M-Node, Planetary Collegium, University of Plymouth, UK, and is since 2008 the head tutor of the Honours Program Art and Research of the University of Amsterdam and the Gerrit Rietveld Academy Amsterdam. All her installations are about the physics of thought.
www.roomforthoughts.com

Glauce Rocha de Oliveira, PhD

Glauce Rocha de Oliveira holds a PhD and a master's degree in English from the University of São Paulo (USP), Modern Languages Department, Faculdade de Filosofia, Letras e Ciências Humanas. Her research fields include visuality, virtuality, multimodality, and language education. She is also a lecturer and journalist in São Paulo, Brazil.

Rosa Oliveira

Rosa Oliveira is Professor at the Department of Communication and Art, University of Aveiro, Portugal, and a researcher of the ID+ Research Institute for Design Media and Culture (www.idmais.org). Her research is focused on Contemporary Art, Art and Science and Art Education.

Mary Oliver

After a couple of decades as a Live Artist, in 1998 Mary Oliver began experimenting with digital performance. These interactive "real time" conversations have attempted to bring impossible relationships to the performance space and make them appear real. By using a conflation of screen writing, computer programming, video making and devised performance techniques she brings different kinds of skills and human behavioural interests to the live/screen interface and to discussions on interactivity. Mary Oliver is Reader in Digital Performance and Director of the Performance Research Centre at the University of Salford UK. (www.maryoliver.net).

Pam Payne

Pam Payne is an artist based in NYC who has been working with digital media since the mid-1980s. Her work explores the interaction of electronic and organic forms through video motion paintings, installations and performance. She is interested in states of consciousness and transformative human experience communicated and achieved via art and music. She earned her Master's degree from New York University's Interactive Telecommunications Program in 1989 focusing on video and digital systems and her BA from SUNY Potsdam in 1982 in Fine Art (Printmaking) and Psychology. She is also a trained musician with a background in dance and creative writing. In 1995 she formed Brickhaus, a company specializing in presentation design and production. Her experience includes the development of analog and digital (software) video tools and teaching in

the media arts field. Pam Payne actively exhibits her artwork in the USA, Mexico and Central America and is the recipient of grants from the National Endowment for the Arts, New York State Council on the Arts, Lower Manhattan Cultural Council and The Puffin Foundation.

Mike Phillips

Mike Phillips is professor of Interdisciplinary Arts, University of Plymouth, School of Arts & Media, Faculty of Arts. He is director of i-DAT, a component of the Centre for Media, Art & Design Research, and Principal Supervisor for the Planetary Collegium. His R&D orbits digital architectures and transmedia publishing, and is manifest in two key research projects: Arch-OS [www.arch-os.com] (now reincarnated in Perth WA in the form of the i-500 [www.i-500.org]), an "Operating System" for contemporary architecture ("software for buildings") and the LiquidPress [www.liquidpress.net] which explores the evolution and mutation of publishing and broadcasting technologies.

Clemens M. Plank

Clemens M. Plank is an architect, researcher and lecturer at the University of Innsbruck, Faculty of Architecture, where he supervises a design studio and teaches architectural theory. His academic work draws strongly on neuroscientific research, pursuing a contemporary analysis of the phenomenological experience of architecture. His real-space experiments have been exhibited at Researchers Night, Innsbruck, 2005 and 2007; VLOW, Bregenz, 2008 (Winner Award vlow08 for young researchers). He is also active in architectural practice, focusing on residential and cultural building.

Dr. Barbara Rauch

Dr. Barbara Rauch is an artist practitioner and academic. Funded by the Arts and Humanities Research Council, UK, her research on 3-dimensional prints and screen-based works culminated in an exhibition/symposium at the Institute of Contemporary Arts, London and conference at the Victoria & Albert Museum, April, 2009. She was Acting Director of the "Sensory Computer Interface Research and Innovation for the Arts" research unit at University of the Arts London, UK. She is currently writing a book for the "Consciousness, Literature & the Arts" series with Rodopi Editions, New York and Rotterdam. Rauch is a key member of OCAD's strategic Digital Futures Initiative.

Julian Rennie

Julian Rennie holds a B.Arch. (Honours) (1983) and a Grad. Dip. in Higher Education from Unitec, Auckland, New Zealand (2009). He was finalist and Prize winner in Housing New Zealand's "The Starter Home Design Competition," 2009; and was awarded Highly Commended Prize in Housing New Zealand's "100 Years On Design Competition," 2005. Conference/Presentations/ Exhibitions include "Being There," Toronto, Canada, April 2010; "Fly on the Wall: Can the presence of the student during the assessment process help in their learning?" connectED 2010 Conference, Sydney, Australia, June–July 2010; Group Exhibition of the Entries for Positively Wellington's Waterfront, at Shed #6: Blue Sky Outer–T, Architectural Competition, 2009; Group Exhibition of the 10 Winning Entries for Housing New Zealand's "The Starter Home Design Competition," at Parliament Buildings, Wellington, 2009.

Clarissa Ribeiro

Clarissa Ribeio is a PhD researcher at ECA/USP – University of São Paulo, and a visiting postgraduate research member of the CAiiA-Hub, Planetary Collegium, based in Plymouth, UK. At ECA/USP, she is a member of the Digital Poetics group, headed by her research supervisor, Professor Gilbertto Prado. Director of the Double collective and artistic director of Instants of Metamorphosis, the aim of her PhD research is to develop a methodology based on systemic measures of complexity and organization to study collective creative processes and artworks in digital arts and interrelated fields.

Paulo Maria Rodrigues, PhD

Paulo Maria Rodrigues is a composer and performer, working on the fields of theatrical music and music education. After completing a PhD in Biochemistry and Applied Genetics in the UK, he shifted his professional interest to multidisciplinary artistic creation and started Companhia de Música Teatral, an innovative group based in Portugal. During the last four years he coordinated the Education Service of Casa da Música in Oporto, having created a broad program of music experiences for a wide range of audiences. He is currently resuming his professorship position at the University of Aveiro and joining the Planetarium Collegium as an Associated Researcher.

Edward Colin Ruggero

Edward Colin Ruggero received his master's degree from the University of Delaware's Center for Energy and Environmental Policy in 2009, writing a thesis titled "Radical Green Populism: Environmental Values in DIY/ Punk Communities." He is currently an MA candidate in the Sociology department at the New School for Social Research. Colin is involved in numerous political and social activism initiatives.

Emily Schleiner

Piñatas, animal costumes, and sight-specific-demonstration-videos are some tools Emily Schleiner uses to create humorous and irreverent conceptual art. With an eye towards metaphor, her interest in patterns and people is expressed with simbolic imagery, performances,

large-scale-community-projects, sculptures, and short-films; a mix of material that is dipped in a pot of politics, technology, and ephemerality. She does ensemble-style collaborations with artists from multiple disciplines, partaking in the emergent creative process of group art-making, and is currently flocking and herding her way through Brooklyn College's PIMA MFA program and serving as an Outreach and Development Intern at Eyebeam.

Ellen Sebring

Ellen Sebring has been Creative Director of Visualizing Cultures at the Massachusetts Institute of Technology since the project's founding in 2002. She earned the Master of Science in Visual Studies degree at MIT and was a Fellow at MIT's Center for Advanced Visual Studies for six years. She is currently a PhD student at CAiiA at the University of Plymouth, England. Visualizing Cultures received the National Endowment for the Humanities award in 2005, was exhibited at Stephen Sondheim's "Pacific Overtures" on Broadway, and is in the permanent collection of the US National Archives. The project's first conference was held at Yale University in April 2010 and second conference will be at Harvard University in May 2011. As President of Botticelli Interactive, Inc., 1997–2002, Sebring designed interactive media for museums, including the "Titian Kiosk," awarded The New York Festivals' World Medal; an interactive television show commissioned by the Institute for Civil Society; "Star Festival," Best of Show at MacWorld Expo; and "StarNetwork," starring George Takei, awarded the Distinguished Award at the Multimedia Grand Prix 2000, Tokyo. Selected for the prestigious Directing Workshop for Women at the American Film Institute to direct a fiction film in Hollywood, Sebring has also directed many documentaries on the arts. Awards include The Artist's Foundation Fellowship for Video Art, Canon Europa prize at the WorldWide Video Festival, Holland, and Banff Centre, PBS, NEA, NEFA, Meet-the-Composer and NEFV Foundation grants and national broadcasts by WGBH and WNET. Trained as a musician at Indiana University and the Hochschule für Musik und darstellende Kunst in Vienna, Sebring explores the relationship of sound and image in her work.

Paul Sermon

Since the early 1990s Paul Sermon's practice-based research in the field of contemporary media arts has centred on the creative use of telecommunication technologies. Through his unique use of videoconference techniques in artistic telepresence applications he has developed a series of celebrated telematic art installations Awarded the Prix Ars Electronica "Golden Nica", for the hyper media installation "Think about the People now", in 1991. Received the "Sparkey Award" from the Interactive Media Festival in Los Angeles, for the telepresent video installation "Telematic Dreaming" in 1994.

Luca Simeone

Luca Simeone is a design anthropologist and a contemporary entrepreneur. He leads projects in which solutions are designed through ethnographic research methods. His past experiences include the production of award-winning websites and cross-medial interaction design projects for clients ranging from international brands to museums and institutions. Luca has an extensive academic history, featuring participation in scientific and commercial publications and teaching and R&D experience in several universities in Rome, Naples, Milan and New Delhi, on the subjects of Cultural Anthropology, Interaction Design, Innovation, Psychology of Emotions, Experience Design.

Dr. Diana Reed Slattery

Diana Reed Slattery (USA) is a novelist, psychonaut, and video performance artist. For the last ten years, she has been developing a project centered on the exploration of the visual language, Glide, which appears in her sci-fi novel ***The Maze Game***. The LiveGlide software, is a three-dimensional interactive calligraphic writing instrument for Glide forms. Glide, according to its myth of origin in the story-world, is a psychedelic language. States of extended perception were used in the conception, design, and implementation of LiveGlide, in practice and in performance, and in learning how to read the writing produced. Psychedelics provided the means to emerge from the cocoon of natural language into what could be understood as both a pre-linguistic state of direct apperception of the world around and inside us, and as a post-linguistic (post-natural language) realm of evolutionary forms of language. Glide has been described, screened and/or performed live at art, technology, and consciousness conferences in Tokyo, Beijing, São Paulo, Bilbao, San Jose, Plymouth, Perth, Siggraph (LA) and most recently, at the World Psychedelic Forum in Basel. Fulldome screening and performances have been given at the Atlantic Center for the Arts in Florida, the Schenectady Museum, The Plymouth Immersive Vision Center, and the Children's Museum of Science and Technology in Troy. Flat-screen performances have been given at the Children's Interactive Museum in Middletown, Issue Project Room in Brooklyn, and the Center for Sustainability at Penn State.

Simona Sofronie

Simona Sofronie graduated in architecture in Greece and is currently a PhD researcher in Urban Design at the PHL University College and Hasselt University, Belgium. She is working on the development of a ubiquitous urban game that visualizes mental maps as representations of the way people use, perceive and conceive a given spatial environment. Her interests reside in mobile / location-based applications in the urban space, design for social practices and serious-fun gaming. She is part of the research group ArcK at PHL, focusing on the physical/social/cognitive impact of mapping on the urban space.

Marko Suvajdzic

Marko Suvajdzic is a diverse thinker with 15+ years of experience in the creative production space, and with 6+ years of professorial status. His intellectual involvement includes a wide range of projects, from working on AI-intensive video game titles (PF.Magic/Mattel), and from co-founding Internet startups with Internet industry visionaries like Andrew Keen, to founding his own creative production studio, IQ Studios, Inc. Marko has traveled around the globe, has lectured at conferences and art shows in the USA, UK, and Serbia; and is currently an Associate Professor and Department Head at the Academy of Arts in Belgrade, Serbia.

Xiaoying (Juliette) Yuan

Xiaoying Yuan is a PhD candidate of Planetary Collegium, under the direction of Roy Ascott.

Dr. Victoria Vesna

is a media artist, professor at the department of Design | Media Arts at the UCLA School of the Arts, director of the UCLA Art|Sci center and of the UC Digital Arts Research Network. Her work can be defined as experimental creative research that resides between disciplines and technologies. She explores how communication technologies affect collective behavior and how perceptions of identity shift in relation to scientific innovation. Her most recent installations – Blue Morph, Mood Swings and Water Bowls, all aim to raise consciousness around the issues of our relationship to natural systems. Other notable works are Bodies INCorporated, Datamining Bodies, n0time and Cellular Trans_Actions. Victoria has exhibited her work in 18 solo exhibitions, over 70 group shows, published 20+ papers and given 100+ invited talks in the last decade. She is recipient of many grants, commissions and awards, including the Oscar Signorini award for best net artwork in 1998 and the Cine Golden Eagle for best scientific documentary in 1986. In 1984 she was awarded the Fine Arts Diploma of the Faculty of Fine Arts, University of Belgrade, Yugoslavia, and in 2000 she received the PhD of the University of Wales (Centre for Advanced Inquiry in Interactive Arts). She is the North American editor of AI & Society and author of Database Aesthetics. http://vv.arts.ucla.edu/biography/

Claudia Westermann

Claudia Westermann is an artist and licensed architect holding degrees from the University of Karlsruhe and from the School of Design at the ZKM in Germany. Since 2003, Claudia Westermann has been member of the Planetary Collegium (CAiiA) conducting transdisciplinary research under the supervision of Prof. Roy Ascott. She currently holds the position of Assistant Professor in Architectural Design at the Vienna University of Technology, Austria. Claudia Westermann's works have been exhibited internationally including at the Venice Biennale for Architecture, the Moscow International Film Festival, Isea Symposium for the Electronic Arts in Japan, and the ZKM in Karlsruhe. Recent publications include "The Architect's Circle, or The Geometrical Incline of Truth" in *New Realities: Being Syncretic* (Springer, 2008), and "An Entry without Inscription, a Letter, and a Map" in *Orientation _ Dis-/Orientation* (Lars Müller, 2009).

NOTES

NOTES

NOTES

Interactions between the arts, technology, and the sciences, specially in respect of the mind and consciousness, are leading to the emergence of new artistic forms, technological systems, and cultural behaviours, as well as to re-evaluation of the hegemony of western science, and the significance, both spiritually and materially, of the practices and paradigms of other societies. Over the past eleven years, the Consciousness Reframed conferences have been convened in Europe and the Far East, involving leading-edge artists, scientists and scholars in an emergent discourse that is transdisciplinary, transcultural and syncretic. This year, hosted by TEKS, and as part of the Meta.Morf biennial of art and technology, an international group of experts met in this context, under the rubric ***Making Reality Really Real****. Some 60 provocative, visionary, poetic and pragmatic perspectives, proposals and projects are published here, including papers by Marco Bischof, James Gimzewski, Luis Eduardo Luna, Ryohei Nakatsu and Victoria Vesna.*

Roy Ascott

www.teks.no