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ISEA2010 RUHR

**16th International Symposium
on Electronic Art**

**20-29 August 2010
Ruhr/Germany**

**ISEA
2010
RUHR**

**Proceedings
of the
16th International
Symposium on
Electronic Art**



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ISEA2010 RUHR**

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PIELACHE2010





Introduction

This volume provides a documentation of the ISEA2010 RUHR Conference Programme, organised within the 16th International Symposium on Electronic Art in the German Ruhr region from 20-29 August 2010.

It is the result of an extensive and complex process involving the cooperation and effort of hundreds of contributors – a process which we believe is worthy of a short recapitulation.

The contributions to the ISEA2010 RUHR Conference programme have been selected from a total of 1052 proposals. About a fourth of them were paper submissions and proposals for conference panels, and in addition to these, many authors from other categories (exhibition, performance, film and internet projects), whose projects could not be realised in the festival programme, have been selected on the Reviewing Committee's recommendation to be invited for artist presentations in the conference framework. Submissions to the Call for Proposals came from 58 countries, the largest proportion being German contributions, followed by large numbers of projects from the U.S. and Great Britain, Canada and France, the Netherlands, Belgium, Australia, Austria, Italy, Brazil and Japan.

The submission and peer reviewing process as well as the final paper submission for publication was carried out via a custom-made online platform. On this platform each of the proposals has been reviewed by at least two members of the International Reviewing Committee, which included 88 experts from various media art related fields, of 29 different nationalities. The evaluation of the committee's ratings and comments resulted in the selection of 156 proposals, which were then grouped into the thematic conference panels constituting the ISEA2010 Conference, complemented by a keynote programme and several panels, roundtables and workshops realised with cooperating institutions.

All confirmed conference speakers – academic researchers as well as the invited artists – have been offered the possibility to contribute texts on their presentations, and as a result this volume assembles papers by an impressive number of 236 authors and co-authors from over 40 countries.

While the length of the individual contributions had to be limited due to the large number of papers, we believe that the resulting compilation does

justice to the abundant diversity of topics and interests covered in the conference. The two "research themes" that were originally proposed as a rough guideline for submissions to the Call for Proposals have been richly responded to, so that both "Sounds" and "Ecologies" remain two important focal points of the conference. However, the conference covers a range of topics that goes far beyond those themes. The following pages include contributions on recent research in the fields of media art theory and history, discussions of the relation of body and media and of preservation strategies for media art, presentations on new developments in visual art and code art, reflections on social media and the role of the digital user, on public spaces and geographies, and much more.

The papers in this volume follow the chronological order of the conference. Please refer to the index at the end of the volume to find the papers of specific authors. The editorial team has made only very marginal changes to the submitted texts, and the responsibility for the content lies solely with the individual authors.

We hope that this collection will serve as a valuable repository to conference participants as well as to those who could not join us for ISEA2010 RUHR. Our sincere thanks go to the authors and all other persons involved, without whom the production of this volume would not have been possible.

Judith Funke
Project Manager Conference

Stefan Riekeles
Programme Director

Andreas Broeckmann
Artistic Director

Table of Contents

■ 25 ISEA2010 Keynotes | Overview

■ 27 Keynote

- 27 **Brian Massumi (qc/ca)**
What Makes an Event? Considerations for the Occurrent Arts

■ 29 P 1 – Enunciations of Nonhuman Performativity

- 30 **Valerie Lamontagne (qc/ca)**
Materiality, Posthumanist Performativity, and Wearables
- 32 **Christopher Salter (qc/ca)**
Alien Agencies. Liveness and Nonhuman Performativity
- 35 **Harry Smoak (qc/ca)**
Your Participation Not Required. Machinic Performances
- 38 **Patrick Harrop (ca)**
Metastatic Membranes. Modulations of Threshold
- 40 **Jens Hauser (de/fr)**
Looking 'through' Biomedica: Post-Anthropocentrism as Immediacy without Agency

■ 41 P 2 – Motion Lab

- 42 **Scott deLahunta (nl)**
Publishing Choreographic Ideas
- 45 **Sarah Drury (us)**
The World-Producing Body
- 48 **Susan Kozel (us), Mia Keinanen (fi/ru), Leena Rouhiainen (fi)**
IntuiTweet. Corporeal Excavations of Social Networking
- 51 **Martin Kusch (qc/ca), Marie-Claude Poulin (qc/ca)**
passage – a Hybrid of Interactive Installation and Performance
- 53 **Christopher Salter (qc/ca), Marije Baalman (qc/ca)**
SenseStage: Low Cost Open Source Wireless Sensor
Infrastructure for Live Performance and Interactive Real Time Environments
- 56 **Nathaniel Stern (us)**
Implicit Art (Artist Presentation)
- 59 **Sofy Yuditskaya (us), Damian Frey (at), Valeria Maracco (nl)**
Perils of Obedience
- 61 **Chris Ziegler (de)**
Interfacing Dance Knowledge/DSIDM Installation

■ 64 P3 – Appropriating Social Media

65 **Robert Sakrowski (de), Sven Bäucker (de)**

Curating Youtube Box [CYB]

67 **Birgit Richard (de)**

YouTube Favorites = Media Masters

70 **Marion Walton (za)**

Mobile Republic: Visual Approaches to Discourse in South African
Mobile Social Networks

73 **Sabine Himmelsbach (de)**

Art and Politics. The Edith Russ Site for Media Art: A Space for
Presentation and Production of Media Art

■ 76 P4 – Heavy Matter

77 **Monika Wagner (de)**

Materiality, Mediality and Concepts of Touch

79 **Marta de Menezes (pt)**

Biology as a New Art Medium and Its Possible Implications
in Art Research

82 **Leah Buechley (us)**

Technology, Materiality, and Aesthetics

85 **Georg Vrachliotis (de/ch)**

Simply Scripting, Milling, Printing? On the Resistance of Materials and the Question
of Precision in Digital Architecture and Fabrication

■ 87 P5 – Theory and History of Media Art I

88 **Oliver Grau (at)**

Media Art in Exploration of Image History

90 **Lioudmila Voropai (ru)**

Media Art and Its Theories from “New Avant-garde” to “Science-Brut”
Discourse Analysis Approach

92 **Christo Doherty (za)**

Rethinking Cybernetics and Electronic/New Media Art History

■ 95 P6 – Building Musical Instruments

96 **Elisabeth Schimana (at)**

Forgotten Future #1. Magical Sound Machines

98 **Halldór Úlfarsson (is)**

Briefly on Halldorophones (Text by Rune Söchting)

■ 100 P 7 – Theory and History of Media Art II

- 101 **Anita Mckeown (gb)**
Diggers and Dreamers of the 20th and 21st Century:
Creative Commons, Open Source and Digital Folkore
- 104 **Joelle Dietrick (us)**
Flexibility after Destined Death
- 106 **Edward Shanken (us/nl)**
Contemporary Art and New Media: Outline for Developing
a Hybrid Discourse

■ 109 P 10 – Hybrid Public Spaces

- 110 **Jiun Jhy Her (gb), Jim Hamlyn (gb)**
Challenging Interactivity in Public Space
- 113 **Lanfranco Aceti (tr)**
Transcultural Electronic Negotiations: The Redefinition
of Public Art across Cultures and Media
- 116 **Söke Dinkla (de)**
The Aesthetics of Electronic Art in Public Spaces

■ 118 P 11 – Coded Art

- 119 **Ivan Monroy Lopez (mx)**
“print soapbox”
- 121 **Pall Thayer (is), Lon Dubinsky (ca)**
The Coded Aesthetic Experience
- 124 **Doreen Hartmann (de)**
Computer Demos and the Demoscene: Artistic Subcultural Innovation in Real-Time
- 127 **Morten Breinbjerg (dk)**
Poesis of Software Use. Music, Materiality and Live Coding

■ 129 Keynote

- 129 **Peter Weibel (de/at)**
The Tongue That Sees. Neuroaesthetics, Molecular Aesthetics
and Media Aesthetics

■ 130 P 12 – Sonic Strategies

- 131 **Rachel O'Dwyer (ie)**
Sound in the Networked City. Investigating the Role
of Sonic Experience in the Informational Society
- 133 **Yolande Harris (nl)**
Making the Inaudible Audible: Strategies and Disagreements
- 136 **Shintaro Miyazaki (de), Martin Howse (de)**
Detektors. Rhythms of Electromagnetic Emissions, their
Psychogeophysics and Micrological Auscultation
- 139 **Marc Chia (sg)**
From Aleatoric Machines to the Future Sounds of Folk

■ 142 **P 13 – Still Accessible? Rethinking the Preservation of Media Art I**

143 **Renate Buschmann (de)**

Still Accessible? Rethinking the Preservation of Media Art

145 **Rudolf Frieling (de/us)**

Between Remake and Reperformance: Emerging Narratives in Media Art

146 **John Bell (us)**

Archiving Experience The Third Generation Variable

Media Questionnaire

149 **Gaby Wijers (nl), Rony Vissers (nl)**

Obsolete Equipment – the Preservation of Playback and Display

Equipment for Audiovisual Arts

152 **Tiziana Caianiello (de), Julia Giebeler (de)**

Conserving Interactivity: imai Case Study on Bill Seaman's *Exchange Fields*

■ 155 **P 14 – The Digital Aesthetics of Climate Crisis**

156 **Søren Bro Pold (dk)**

The Digital Aesthetics of Climate Crisis

158 **Lars Bo Løfgreen (dk)**

A Project of Disjunction and Conjunction. On the Aesthetics of Climate Change

160 **Morten Breinbjerg (dk)**

From Representation to Action. How Art Addresses Climate Change

162 **Jonas Fritsch (dk)**

CO2nfession/CO2mmitment: Experimental Urban Media in the Climate Change Debate

165 **Christian Ulrik Andersen (dk), Søren Bro Pold (dk)**

Participatory Pyramids – An Interface for Climate Change?

■ 168 **P 15 – Expanded Visual Spaces**

169 **Roderick Coover (us)**

The Digital Panorama in Cultural Representation

171 **Chris Bowman (au)**

Explorations of Visual Representation: Towards a Language of Movement

174 **Louis-Philippe Demers (ca/sg), Armin Purkrabek (de/sg),**

Philip Schulze (de/sg)

Embedded Scenography in Interactive Public Art

177 **Pierre Proske (au)**

Frame Seductions

■ 180 **P 16 – Artistsinlabs: Networking in the Margins of Eco-Activism**

181 **Jill Scott (au/ch), Angelika Hilbeck (de/ch), Andrea Polli (us),
Juanita Schläpfer-Miller (gb/ch)**

Networking in the Margins of Eco-Activism

■ 187 **P 17 – Media Politics of the Local**

- 188 **James Wallbank (gb)**
Life on the Trailing Edge. Ten Years Exploring Trash Technology
- 190 **Yara Guasque (br)**
Some Initiatives in Pervasive Games in the State of Santa Catarina
- 193 **Leandro Pisano (it)**
Exploring Rural Territory as a New Medium
- 195 **Ricardo Peach (au)**
'Proticipation': The Australia Council and Social Media Arts
in Virtual Worlds

■ 197 **P 18 – Musical Devices**

- 198 **Thor Magnusson (gb)**
ixi lang: A Constraint System for Live Coding
- 201 **Bernhard Garnicig (at), Gottfried Haider (at)**
Production of a Spatial Audio Narrative
- 204 **Luca De Rosso (it)**
OTTO – Musical Instrument for Realtime Manual Beat Slicing
- 207 **Olivier Pasquet (fr)**
The Doomsday of Music
- 209 **Steffen Müller (de), Frederik Kalisch (de)**
The attract-o-tone: a Performance-Oriented Musical Interface

■ 211 **P 19 – Cyborgs and Transhumans**

- 212 **Eva Vrtačić**
The Cartesian Subject 2.0. Body/Mind Dualism and
Transhumanist Thought
- 214 **Vanessa Ramos-Velasquez (br/de)**
Digital Anthropophagy & Anthropophagic Re-Manifesto
(for the Digital Age)
- 217 **Yonggeun Kim (kr), Joonsung Yoon (kr)**
Quasi-autopoiesis; Sublimed Human Intellect

■ 220 **P 22 – Really Existing Social Media**

- 221 **Geoff Cox (gb)**
Introducing Really Existing Social Media
- 223 **Alessandro Ludovico (it)**
[Id]entities as a Multilayered Self. The Individual Pervasiveness of Social Networks
- 225 **Rui Guerra (pt/nl)**
Online Communities and Client-Server Architectures
- 227 **Katrien Jacobs (cn)**
Lizzy Kinsey and the Adult Friend Finders
- 230 **Florian Cramer (nl)**
Analog Media as (Anti-)Social Networking

■ 232 **P23 – Coded Cultures and Japan Media Arts Festival Panel Session**

- 233 **Georg Russegger (at/jp)**
CODED CULTURES. Exploring Creative Emergences
- 236 **Georg Tremmel (at/jp), Shiho Fukuhara (jp)**
Common Flowers/ White Out. Bio-Hacking, Open-Sourcing and Exorcising GM Flowers

■ 239 **P24 – Atmospheres and Ecologies**

- 240 **Alex Haw (gb)**
Auto Atmospheres & Artificial Ecologies. Natural Architecture and Artificial Environments
- 242 **Anna Dumitriu (gb), Blay Whitby (gb)**
Cybernetic Bacteria 2.0
- 245 **Andrea Polli (us)**
Airspace The Interface of Biodigital Communication
- 247 **Susan Ballard (nz)**
Nonorganic Life: Encounters between Frequency and Virtuality in Antarctica

■ 250 **P25 – Media Spaces/Personal**

- 251 **Cym (Simone van Groenestijn) (nl)**
Aus Alt Mach Neu – Recycling Arts
- 253 **Linda Duvall (ca)**
Transparency of Digital Manipulation or Not. Discussion of Where Were the Mothers? Video Installation
- 254 **David Green (ca)**
Rupture
- 256 **Kaspar Wimberley (de)**
Homezone
- 259 **Ina Conradi (sg)**
Digital Imaging in Singapore – Internal External

■ 262 **P26 – Public Interventions**

- 263 **Owen Mundy (us)**
Automata: Counter-Surveillance Using Public Space
- 265 **Jonas Fritsch (dk), Christoph Brunner (dk)**
Balloons, Sweat and Technologies: Urban Interventions through Ephemeral Architectures
- 268 **Georg Klein (de)**
Don't Call It Art! On Artistic Strategies and Political Implications of Media Art in Public Space
- 271 **Georg Dietzler (de)**
Radical Ecological Art and NO Greenwash Exhibitions

■ 273 **P 27 – Mapping Virtual Skies**

- 274 **Max Neupert (de)**
Satellite Zodiac
- 276 **Alejandro Duque (co), Luis Bustamante (co)**
Unsigned.
- 278 **Laura Plana (es)**
Database Visualizations, Mapping and Cartography. Genealogy of Space. Visual Representation for Knowledge in Art
- 281 **Jihyun Kim (kr), Andres Colubri (ar)**
ITCH. Individual Technology/Community Hacking

■ 284 **Keynote**

- 284 **Roy Ascott (gb)**
MIND-LAUNCH: Reflections/Projections on Education as Art

■ 287 **P 28 – Digital Art | Digital User**

- 288 **Dominika Szope (de)**
The Impact of Active Viewing, and Visual Literacy in Art Exhibitions
- 290 **Anett Holzheid (de)**
Words and Characters in the Age of Electronic Performativity
- 292 **Julius Popp (de)**
The Artistic Approach and Conceptual Framework
- 293 **Katja Kwastek (de)**
The Aesthetic Experience of Interactive Art:
A Challenge for the Humanities – and for the Audience

■ 295 **P 29 – Latin American Forum I:
Variantologia Latina**

- 296 **Siegfried Zielinski (de)**
Variantologia Latina
- 297 **Domingo Ledezma (us)**
Interpreting New World Nature: Niermberg's Historia Naturæ
as a Palimpsest of Fantastic Literature
- 300 **Karla Jasso (mx)**
Novohispanic Imaginary. Light, Shadow and Diagrams

■ 302 **P 30 – History of Computer Art**

- 303 **Wolfgang Schneider (de)**
In Favour of Computer Art
- 305 **James Faure Walker (gb)**
Twenty Years of ISEA: a Painter's Response
- 308 **Jürgen Claus (de/be)**
Footnotes to the Electronic Bauhaus 2010

■ **310 P31 – A to X: Audience Experience
in Media Art Research**

311 **Lizzie Muller (au), Peter Ride (gb), Nathaniel Stern (us),
Katja Kwastek (de), Christopher Salter (qc/ca)**

A to X: Audience Experience in Media Art Research

■ **315 P32 – Latin American Forum II: Current Media Art
Practice/Curators and Organisers**

316 **Juan José Díaz Infante (mx)**

Interrupted Realities

319 **Claudio Rivera-Seguel (cl)**

Collaborative Commons: Latin American Interdisciplinary
New Media Initiatives

322 **Tania Aedo (mx)**

(ready)Media: Towards an Archaeology of Media and Invention in Mexico

324 **Giselle Beiguelman (br)**

Technophagic Emergence. Creative and Critical Trends of Digital Culture.BR

■ **327 P33 – Media Architectures**

328 **Joonsung Yoon (kr), Suk Chon (kr), Hoyeon Lee (kr),
Jangwon Lee (kr)**

Superimposition of Old and New Media: "Light Wall", on Seoul Museum of Art Project

331 **Michael Pinsky (gb)**

Public Programming: Exploring the Power of New Technologies
to Augment the Relational Aspects of Art within the Public Realm

332 **JeongHo Park (kr)**

Silhouette Interference

■ **334 P34 – ISEA2010 Education Workshop**

335 **Nina Czegledy (ca/hu)**

Novel Incentives, Emerging Trends & Hybrid Practice.
The Future of Education?

■ **337 P35 – Augmenting Reality**

338 **Diane Gromala (ca), Meehae Song (ca), Steven J. Barnes (ca)**

Better Than Opiates

340 **Andrea Sosa (ar), Laura Maiori (ar)**

The Bit Expansion. Origin of Augmentation Operations in Mixed Realities.

343 **Brass Art (Anneke Pettican (gb), Chara Lewis (gb), Kristin Mojsiewicz (gb))**

Digital Doubles

346 **Jan-Peter E.R. Sonntag (de)**

From the sonArc::project to C_plexus solaris. From In-forming
Plasma in Vitro to Transforming the Solar Storm in 2012 in Vivo

■ 349 **P 36 – Software for Artists**

350 **Tom de Smedt (be), Frederik De Bleser (be), Lucas Nijs (be)**
NodeBox 2

353 **Giles Askham (gb), Luke Hastilow (gb)**
Cubed. A Networked Physical Gaming System

356 **Christian Jacquemin (fr), Benjamin Lee Martin (fr)**
Interactive Animation of a Large Scale Crowd for Art Installations:
the Case of Humanography

■ 359 **P 37 – Taking Action – Sociopolitics and Media**

360 **Evelin Stermitz (at)**
ArtFem.TV [www.artfem.tv]. Feminist Artistic Infiltration of a Male Net Culture in
Context of Art and Feminism and as Cyberfeminist Action

■ 363 **P 38 – ‘Press Delete’ – The Politics
and Performance of Spamculture**

364 **Kristoffer Gansing (se)**
‘Press Delete’ – The Politics and Performance of Spamculture

366 **Camille Paloque-Bergès (fr)**
Proto-Spam. Early Forms of Spam as Vernacular Performance on Usenet

369 **Finn Brunton (us)**
An Infinite Continuum of Spewage: Bayesian Filtering and the Reinvention of Spam.

372 **Tony Sampson (gb), Jussi Parikka (fi)**
Learning from Network Dysfunctionality. Accidents, Enterprise
and Small Worlds of Infection

■ 374 **P 40 – Interactive Transmission**

375 **Sarah Taylor (gb)**
A New Colour Palette as Digitally Controlled Light

377 **Steve Heimbecker (ca)**
Wind Space Architecture, Transmission and Sonic Mass
the Turbulence Sound Matrix and FLEX

380 **Wang Zheng (cn), Qiansheng Li (cn), Fei Jiang (cn), Jiankang Ji (cn),
Jingming Liu (cn)**
Pulsation of City. Interactive Flying Ball Installation

■ 382 **P41 – Smart Interfaces**

- 383 **Ursula Damm (de), Matthias Weber (de), Sebastian Hundertmark (de)**
Fernfuehler – an Art and Research Project about Ambient
Intelligent Furniture for Public Places
- 386 **Maria-Camilla Fiazza (it), András Szalai (hu), Eszter Ozsvald (hu), Krisztián Gergely (hu)**
RoB-ArtS: Robotic Behavioral-Arts System. A Platform
for Creative Exploration of Agent Behavior
- 389 **Nanda Khaorapapong (gb)**
Making the Human Heart a Medium for Social Interaction
- 391 **Mark Chavez (sg)**
Cinematics And Narratives: Prototype1.2

■ 394 **P42 – Grounded Virtuality**

- 395 **Diane Gromala (ca), Meehae Song (ca), Steven J. Barnes (ca)**
Inter(root), Banyan
- 397 **Andrew Wilson (gb), Paul Coulton (gb)**
Free All Monsters!
- 399 **Moritz Wehrmann (de), Jasmin Meerhoff (de)**
“... so schallt es heraus”

■ 401 **Keynote**

- 401 **Margaret Morse (us)**
Out of Synchrony. What Artists Do Despite the Worn Out
Conceptual Frameworks We Use to Think About Art

■ 402 **P43 – Latin American Forum III: Recent Histories of Electronic Culture in Latin America**

- 403 **Andres Burbano (co)**
Asuar Digital Analog Computer. If It Works It's Out of Date
- 406 **Enrique Rivera (cl), Catalina Ossa (cl)**
Absolutum Obsoletum
- 409 **Alejandro Duque (co)**
Maleficio. Rituals of the Illnatured
- 412 **Lila Pagola (ar)**
From Free Software to Criticism on the Authorship Notion
in Artistic Practices in Argentina
- 415 **Simone Osthoff (br/us)**
Women, Art, and Technology in Brazil

■ 418 **P 44 – New Art Theory I**

- 419 **Lucas Evers (nl), Susanne Jaschko (de)**
Process as Paradigm
- 421 **Tegan Bristow (za)**
Methods of Evocation: The Evocation of the Sublime in Digital Art
- 424 **Liesbeth Huybrechts (be)**
The Role of Risky Objects in an Internet of Things

■ 427 **P 45 – Latin American Forum IV:
Current Media Art Practice/Artist Presentations**

- 428 **Ivan Puig (mx)**
ivanpuig/art/technology/production/context/mexico
- 431 **Rejane Cantoni (br)**
Intelligent Environments: Research and Experiments in Interactive Cinema
- 434 **Brian Mackern (uy)**
Netart Latino "database"/ Interface-Map
- 437 **Lucas Bambozzi (br)**
On Mobile Crash
- 440 **Arcangel Constantini (mx)**
Water-Art-Technology

■ 443 **P 46 – Codifying History (Archive/Preservation I)**

- 444 **Nicholas Lambert (gb)**
The CAT Project as an Historical and Archival Collaboration
- 446 **Honor Beddard (gb), Douglas Dodds (gb)**
Codifying History: the CAT Project Examines the International
Trajectory of Computer Art 1975-2000
- 448 **Francesca Franco (gb)**
"Computer Art in the Mainstream": How the Venice Biennale
Responded to the Historisation of Computer Art in the 1980s

■ 450 **P 47 – Leonardo Education and Art Forum (LEAF) Meeting:
Art-Science – Curricular Models and Best Practices**

- 451 **Edward Shanken (us/nl), Paul Thomas (gb/au), Jill Scott (au/ch),
Jennifer Kanary Nikolov(a) (nl/gb)**
Art-Science: Curricular Models and Best Practices.
Leonardo Education and Art Forum (LEAF) Workshop

■ 454 **P48 – New Art Theory II**

- 455 **Christiane Heibach (de)**
Multimedia Art and Multisensory Experience. Towards
an “Epistemology of Multimedia”
- 458 **Eva Kekou (gr), Ioannis Zannos (gr), Nicolas Remy (fr/gr)**
What is All this Noise About
- 460 **Sebastian Schmidt (de), Thomas A. Troge (de), Denis Lorrain (us)**
Qualia and Conceptual Blending. Another Structure of Music

■ 463 **P49 – Media Gardens**

- 464 **Thomas Munz (de)**
The Laboratory Garden
- 466 **Peter Veenstra (nl), Geert-Jan Hobijn (nl),**
Trains, Cars and Trees
- 469 **Sofian Audry (ca)**
Absences. Public Art Interventions in Natural Spaces using
Autonomous Electronic Devices
- 472 **Shannon C. McMullen (us)**
Machines as Gardens: Visual Culture and Post-Steel Sensibilities
in the Ruhr District

■ 474 **P51 – Archive/Preservation II**

- 475 **Anne Laforet (fr)**
Net Art and Preservation. For Museums and Artists
- 477 **Gabriella Giannachi (gb), Duncan Rowland (gb), Steve Benford (gb)**
Digital Waste or a Valuable Resource? Exploring the Aesthetics,
Ethics and Value of Contextual Footprints

■ 480 **P52 – New Art Theory III**

- 481 **Inês Albuquerque (pt), Ricardo Torres (pt), Rosa Maria Oliveira (pt)**
From Art as Knowledge to the Aesthetics of the Subject.
New Ways of Thinking the Art of the 21st Century
- 484 **Michael Brodsky (us)**
Big Pixels: Pictoglyph to Favicon – A History of the Pixel
- 487 **Yonggeun Kim (kr), Seungae Bang (kr), Joonsung Yoon (kr)**
Site-Specific Art as Necrophilia; Platform in Kimusa Exhibition in Seoul 2009

■ 490 **P 53 – Algorithmic Topology**

491 **Eugenia Fratreskou (gb)**

Unfolding Space

494 **Gabriel Menotti (gb)**

Computation as Dynamic Topography: The Coordination of Algorithms,
Apparatus and Architectures in the Production of Digital Images

497 **Martin Koplin (de), Carl Skelton (de), Helmut Eirund (de),
Thorsten Teschke (de)**

Betaville

500 **Lone Koefoed Hansen (dk)**

Practicing the Generic (City). Reconfiguring Life through Digital Media

■ 503 **Keynote**

503 **Harald Welzer (de)**

Geo-Crises: From Knowledge to Action

504 **Marko Peljhan (si)**

Logistics and Strategies – What I Have to Tell You about Radio and 1995

506 **David d'Heilly (jp/us)**

Tokyo Galapagos

■ 508 **P 54 – Ludic Maps**

509 **Alison Gazzard (gb)**

Datalogging the Landscape

512 **Polise De Marchi (br)**

Re(cognition) Mapping. Redefining Space, Place and Territory

514 **Margarete Jahrmann (at/ch), Verena Kuni (de)**

Uplay. Urban Playgrounds. Developing Ludic Strategies and Interfaces
for Participatory Practices in Urban Space

■ 517 **Workshops**

518 **Antti Ahonen (fi)**

Towards the Post-Digital Era

521 **Andy Gracie (gb), Marc Dusseiller (ch)**

Hackteria and Bioelectronix

524 **Andrew Gryf Paterson (gb/fi)**

Herbologies / Foraging Networks

■ 528 **Index of Authors**

ISEA2010 RUHR Keynotes

The Keynote Lecture Programme of ISEA2010 RUHR presents outstanding contemporary positions on art, science and society. The lectures deal with media and new identities, current scientific and artistic paradigms, utopian models and responses to the global crisis. They are addressed to a wider audience and seek, within the framework of the ISEA2010 RUHR conference programme, to generalise on those topics that have proven to be particularly important in the lead up to ISEA2010 RUHR, and that in the morning and afternoon panels will be treated in detail by participants. The main topics of the conference will be condensed into the keynote presentations and so offer a comprehensive overview of the state of things in debates about art and culture.

The Keynote Lecture Programme ISEA2010 RUHR is organised in cooperation with the Federal Agency for Civic Education.

Brian Massumi (qc/ca) ■ 27

What Makes an Event? Considerations for the Occurrent Arts

Peter Weibel (de/at) ■ 129

The Tongue That Sees. Neuroaesthetics, Molecular Aesthetics and Media Aesthetics

Roy Ascott (gb) ■ 284

MIND-LAUNCH: Reflections/Projections on Education as Art

Margaret Morse (us) ■ 401

Out of Synch. What Artists Do Despite the Worn Out Conceptual Frameworks We Use to Think About Art

Harald Welzer (de) ■ 503

Geo-Crises: From Knowledge to Action

Marko Peljhan (si) ■ 504

Logistics and Strategies—What I Have to Tell You about Radio and 1995

David d'Heilly (jp/us) ■ 506

Tokyo Galapagos

Fernando Garia Dory (es)

(no contribution in this volume)

What Makes an Event? Considerations for the Occurrent Arts

Keynote

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The 'occurrent arts' is a name suggested by philosopher Suzanne Langer for arts of the event. Digital media have complicated the question of what constitutes an art event – or for that matter an event in general – by making spatially and temporally distributed events the new norm. What makes an event an event when its occurrence is dispersive: when no unified perspective on it or integral experience of it is possible? The notion of distributed cognition is often appealed to in answer to this question. Does distributed cognition solve the problem, or complicate it further? The questions of distributed events and distributed cognition are not only relevant to art, but also have been a central topic for military theory in the age of 'netwar'. This paper considers some of the questions raised by the notions of distributed events and distributed cognition, in art and war, drawing on the philosophies of experience of William James and A.N. Whitehead.

The following text is an excerpt from: Brian Massumi, "The Thinking-Feeling of What Happens" *Inflexions* 1.1 "How is Research-Creation?" (May 2008)

... I think the concept of "media" is in crisis. It's in tatters. That's because the digital isn't a medium, but it is what is now dominating the media field. Digital technology is an expanding network of connective and fusional potentials. You can take an input in any sense modality, and translate or transduce it into any other, say sound into image. You can take any existing genre of artistic practice and fuse it with any other, say animation with cinema. Digital technology has no specificity as a medium in its own right. That is why commentators like Lev Manovich call it a "meta-medium." But that doesn't get you very far. From there the best you can do is catalogue the kinds of connections that are possible, chart their permutations. It leads to an encyclopaedic approach. At best it gives you a combinatory flow-chart. It entirely shelves the question of art and artfulness. It doesn't give you any vocabulary to think the properly aesthetic dimension, what makes digital art "art." Part of the problem is that the concept of media was never well-formed. Is a medium defined by the material support, say celluloid for cinema? If so, is digital cinema then not cinema? Is a medium defined by the sense modality the product presents itself in – sound for music, vision for cinema? That alternative

misses the absolutely fundamental fact of experience that the senses can take each other up. Michel Chion made that point about cinema. He showed that it is not visual. It operates through what he calls audiovision, a singular-generic fusion-effect of sound and image that emerges when they operate in resonance with one another. Neither sound nor image, audiovision is a kind of effective cross wiring of their potentials. The cinematic image, according to him, is a singular kind of relational effect that takes off from both vision and audio but is irreducible to either. It's a thirdness, a supplement or boosting, that needs them both to happen, but isn't one or the other. It has an experiential quality all its own. It's not a simple mix. A fusion is more than a mix. Mixing as a concept doesn't go much further than meta-medium. It has the same limitations. It's just a general name for the operations that the idea of meta-medium attributes to digital technology. Beyond that, there's the whole problem of the unexamined assumptions about perception that go into the very notion of "mediation." Perception as I have been trying to talk about it, as Whitehead's philosophy says and as embodied cognition also says, is always direct and immediate. It's always its own self-embracing event. It always has presentational immediacy.

All arts are occurrent arts. That's another phrase of Suzanne Langer. All arts are occurrent arts, because any and every perception, artifactual or "natural," is just that, an experiential event. It's an event both in the sense that it is a happening, and in the sense that when it happens something new transpires. There is eventfulness in art, just as there is artfulness in nature. And there is creativity across the board. Because every event is utterly singular, a one-off, even though with and through its one-offness a "likeness" is necessarily thought-felt to a whole population of other events with which it forms an endless series of repeated variations. Langer has probably gone farther than any other aesthetic philosopher toward analyzing art-forms not as "media" but according to the type of experiential event they effect.

You have to rethink what the typology is based on, but also what a typology can be logically. It doesn't have to be a classification system, in the sense of subsuming particulars under an abstract, general idea. It can be based on a differentiating singular-generic thought-feeling. That is to say, it can try to take into account the kind of abstraction that effectively makes a perception what it actually will have been – the really lived abstraction of the virtual. This is a generative typology, a typology of dynamic forms of perception's speculative appearing to itself and in itself. It is an immanent typology or typology of immanence. It amounts to the same thing. The kind of logic called for is what Simondon called allagmatic, an operative logic of the analog expressing "the internal resonance of a system of individuation." Of individuation, because this kind of typology will always have to keep generating variations on itself, as the experience is always being restaged as an event and in the event, recomposed from within. New dynamic forms are always immanently emerging. Art is part and parcel of that process. Its practice speculatively advances its own generative typology. It practically contributes to its own thinking.

P 1

Enunciations of Nonhuman Performativity

Convened by Valerie Lamontagne (qc/ca)

- Valerie Lamontagne (qc/ca):
Materiality, Posthumanist Performativity, and Wearables
- Christopher Salter (qc/ca):
Alien Agencies. Liveness and Nonhuman Performativity
- Harry Smoak (ca):
Your Participation Not Required. Machinic Performances
- Patrick Harrop (ca):
Metastatic Membranes. Modulations of Threshold
- Jens Hauser (de/fr):
Looking 'through' Biomedica. Post-Anthropocentrism
as Immediacy without Agency

The panel interrogates contemporary notions of performance and embodiment from a materialist and (post-)phenomenological point of view. In the light of this approach that includes performance and performativity in various contexts (e.g. Science and Technology Studies amongst other epistemic domains), the potential of the nonhuman to shape performative events enables new considerations about performative practices that comprise humans and nonhumans.

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Materiality, Posthumanist Performativity, and Wearables

Matter, like meaning, is not an individually articulated or static entity. Matter is not little bits of nature, or a blank slate, surface, or site passively awaiting signification; nor is it an uncontested ground for scientific, feminist, or Marxist theories. Matter is not a support, location, referent, or source of sustainability for discourse. Matter is not immutable or passive. It does not require the mark of external force like culture or history to complete it. Matter is always already an ongoing historicity. (Barad, 2003, 821)

Abstract

This paper outlines how wearables reconfigure notions of performativity because of their admixtures of human/nonhuman agencies. It argues that contemporary wearables, in a continuum with technological/body performative entanglement dating from early 20th century art (Avant-Garde), *materially* alter practices of performativity because they propose new and intimately co-dependent agencies of the human/nonhuman. The theoretical arguments to substantiate this human/nonhuman reconfiguration of performativity via wearables are culled from recent Science Technology and Society (STS) and posthumanist approaches to materiality and performativity.

Materiality

Art is material. It always exists in a substrate, a substance, a history of expertise, tools, practices, and in association with the lived physical world – be it in the object or the receiver. Furthermore, when art is technological it enters into a relation with the event. Technology is active – it moves, signals, modulates, and transforms over time, in short it “performs.” Technological art is event-making. Latour argues that the incommensurable divide that Modernism created was to conceptually and materially separate nature from culture (Latour, 1993). To uphold the “illusion” of human supremacy over the environment, and over the nonhuman, however, is an untenable premise

which supposes a material divide between human bodies/intentions and that of technologies/nature. I would like to argue that this divide has long been bastardized in arts. We've been tinkering in consort with, and in sympathy/sympathy with machines certainly since the Modern age, since the Avant-Garde, since Vsevolod Meyerholds' biomechanics or Frederick Kiesler's control walls. (Poggioli, 1968; Salter, 2010) We've been courting material as agency, and machines as "beings" for quite some time now. And we have enlisted them (the nonhumans, the material, the machines, the technology) for more than our servitude – we have enlisted them as active creative collaborators.

Posthumanist Performativity

"Matter", as a platform for enquiry, has had a recent surge of importance. The transformation of matter – in creative and scientific domains – is increasingly at the fore of the shaping and constitution of our rapidly changing world (think: physics! biology! telecommunications!). We can look to the performative turn (in Sociology, Anthropology, Ethnography) as one of the first steps towards the material, the "real", and the lived to better understand the world. Today, techno-scientific practices in the field of STS are increasingly engendering a shift from representational models of the world to actively engaged ones which seek to encounter "materiality." Emphasis on the mechanics of the production of knowledge – laboratory contexts, specific uses of apparatuses, human/nonhuman interactions – have shifted scientific paradigms both towards the physical world (which engages the human and nonhuman) and towards the "active" world with a particular interest in "performativity." (Knorr Cetina, 1999) This interest in the non-representational raises a critique of the premise that scientific knowledge is only encoded in inscriptive forms (documents, theories, papers, texts) – and rather looks at the modalities, the actions and the messy relationship between humans and nonhumans as a platform for the construction of knowledge. (Barad, 2003)

Feminist scholar Karen Barad's quantum physics-inspired posthumanism redefines the concept of performativity from a techno-scientific standpoint to argue that science "performs" – in experiments, in laboratories, with specialised instruments, with human agents etc. Science, as a knowledge-based endeavour, is inherently "performative" for Barad. She notes:

the move towards performative alternatives to representationalism shifts the focus from questions of correspondence between descriptions and reality (e.g., do they mirror nature or culture?) to matters of practices/doings/actions. (Barad, 2003, 802)

Wearables

I wish to investigate wearables as a practice which is specifically reconfiguring the notion and process of performativity via its intimate integration of human and nonhuman actors – both from a production and presentation standpoint. Wearables, intelligent garments/textiles, have as their depar-

ture point to act as second skins, as translators, interpreters, sensors and vehicles for the processes of data which must be lived on/by/with the body. Wearables, as a technology, co-habitate with the body and “perform” in such a way that gives agency, materiality and meaning to both the organic (the body, organism) and the technological (electronics, sensors). Of interest is: How do these two agencies interpolate? What kinds of performative admixtures are produced by the conflation, overlap and feedback loops of these two systems, these two “matters”? And how do wearables rethink “performativity” via “materiality”?

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Alien Agencies.

Liveness and
Nonhuman Performativity

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In 1939, the Austrian trained architect/scenographer Frederick Kiesler authored an essay entitled “On Biotechnique and Correalism: A Definition and Test of a New Approach to Building Design” in which he posed the question “at what point does inanimate matter pass over and become alive?” Kiesler was referring to a 1912 experiment by the Nobel Prize winning surgeon Alexis Carrel in which cells from the heart of a developing baby chick were removed by Rockefeller Institute researchers and healthily grown and sustained inside the technically constructed environment of a test tube culture for over 34 years. As Kiesler wrote, “The experiment confirms the view that, while life only comes from life, it is also dependent on its technological environment” (Kiesler 1939, 74).

Kiesler’s background in architecture and, in particular, scenography, together with his underlying interest in the dynamics of forces that give form to life within the technical environment give us a frame to understand some recent cultural trends, namely, the tendency for researchers and artists in fields as far flung as linguistics, anthropology, game studies, cultural studies, theater, music, HCI, cognitive science, STS and, particularly the new media to utilize the concept of performance and performativity. As I have recently written in the book *Entangled*, “performance as practice, method and world-view is becoming one of the major paradigms of the twenty first century, not only in the arts but also the sciences” (Salter 2010, xxi). Whether the territories of stage spaces, speech acts, linguistic tropes, anthropological and sociological frames or increasingly, the interior of laboratories and scientific practice – none of these escape the grip of performance and its even more complex cousin, performativity. According to feminist scholar Rebecca Herzig, attributing performance to all sorts of disparate contexts appears to be a rampant phenomenon, most recently in the field of science studies. If there is any doubt, it should be clearly evident from the many discussions at this SLSA focused on life and its temporal dynamics and, as we can see from

Kiesler, past artistic practices that employ and simultaneously, problematize technical invention. As Herzig articulates,

Given the heightened recognition of contingency, temporality, and reflexivity made possible by performative analyses, it is perhaps not surprising that a number of recent studies of science reveal a quiet but steady turn toward this useful analytical tool. Accounts which bear striking differences in disciplinary trajectory, methodology, and object of study converge in their invocation of performance (Herzig 2004, 130).

In 2010 there has been a shift away from the performative turn in anthropology and sociology in the mid 1970s with Richard Schechner's interest in the appropriation of theories and methods of the social sciences to understand the nature of human-centered performance practice. Instead, we increasingly are shifting towards what Andrew Pickering has recently termed "performative ontologies" a grappling with the "agency" (to use a particularly problematic word) or actions of things, processes and indeed, technical-vital environments themselves. Indeed, performativity as a concept and world-view seems to have increasingly become a boundary object for different artists, scientists and scholars to understand the political-aesthetic-ethical ramifications of a seemingly incoherent, out of control contemporary technoculture. In this sense, as a way of describing a temporal, dynamic phenomenon, the concept of performance operates across three registers: (1) as a material act (though not necessarily bodily), (2) eventification in and through time, and finally, (3) the temporal unfolding and articulation of an embodied yet, quasi or non human "subject."

While Herzig argues that "with the important exception of [feminist scholar] Karen Barad's work, there has been relatively little traffic between discussions of performances in science and the treatments of performance and performativity elaborated by feminist, queer, or critical race theorists" (Herzig 2004, 128), I will argue that there has been even less work in understanding the increasing attribution of performativity to the hybrid realm of mixtures between quasi-human "agencies" or stuff in the world. Indeed, in an era in which we are increasingly confronted by the indeterminate actions, dynamics and performances of non human forces (volcanos, oil spills) and the ways in which artists are grappling with such forces, perhaps Kiesler's correlationist vision of a world that itself is constituted by the complex, co-productive dynamics of vital, psycho-social and technical beings may provide us with a framework for both analysis and action.

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Your Participation Not Required

Machinic Performances

This presentation draws from a behavioralist perspective of artistic activities in relation to theories of cultural development. Insights found here, the author will argue, may be profitably introduced into current discussions considering how new technologies create new problems for research practices regarded experimentally. Proceeding thusly, the author will consider the relevance of this kind of experimentalism for developing new techniques of cultural production, in particular the development of a 'speculative rhetoric' for new media (here considered generously). A number of recent examples will be considered, including those drawn from the author's own artistic work revolving around dynamical and computational media systems.

What follows is a related and previously unpublished statement which coincided with *Your Participation Not Required* (2010):

Art has no value.

What is experience? Experience is that which impinges upon us. What is spontaneous/extra/excess comes from experience, exceeding our concepts, presenting a perceptual discontinuity. This direct experience of difference may actualize an idea, as suggested by Deleuze, by providing the impetus for the invention of new ways of thinking. Or, as is the more probable case, it is subsumed by a kind of "rage to order." In part this is what allows us to be free in certain senses of that word.

Sensory experience is not all-important. Perceptual beliefs are habits or dispositions towards certain patterns of response behavior. These beliefs need not arise from the senses for their causal efficacy. Meaning cannot be dependent on an individual cognitive act alone, however tenacious the will to believe. Nor is value strictly bound with what human actors in particular construct. The usual arguments for and against this form of relativism and its concomitant anthropocentrism contains two assumptions that need to be

dealt with. The first is an assumption that only humans create meaning in the world. The second stems from the view that the only actors are human. Each (theoretically) excludes nonhuman processes from the co-structuring of meaning.

Art has absolutely nothing to do with making the invisible visible.

Definition alone is not adequate to make an idea clear. A concept must be examined through its relation with practical endeavors. Ideas ought to be tested practically in the course of experience. The thinking in thought has been called an event-disruption, nonsense, excess. What can the new media arts do for thought? A promise of new media lies in our ability to manipulate new forms in order to observe unexpected results. In order to understand something, it must have consequences for ordinary, everyday experience. For thought to move there must first be a living doubt – a hunch that something could or ought to be different. Such a doubt can arise from recalcitrant experience that does not conform with our perceptual expectations, including the private observation of our own behavior. Doubting is not knowing what to believe. It is oriented towards the future. It is logically and historically the first step to an hypothesis which then has to be tested experimentally. This is not always good, or beautiful.

Art has not gotten the philosophy, or the science, it deserves.

The cultural historian Morse Peckham long ago urged us to concentrate on the “semiotic transformation” of what happens, since “the meaning of a sign is the response to that sign or, to be a touch more precise, is the determination of the appropriate response.” From this proposition Peckham derives three important corollaries that are worth quoting at length here:

- (1) Theoretically any sign can elicit all responses [...]; all interpretations are equally valid. (2) Theoretically all signs can, in an individual organism, elicit but a single response. Indeed, in instances of extreme psychosis, that is exactly what can and does happen. Yet behavior that can be subsumed by these two corollaries is extremely rare. (3) Sign response is controlled, and ultimately can be controlled only by force.

If instructions for performance fail to control and stabilize behavior, and if force fails, there is no other recourse than to rhetorical seduction. In contemporary times, this amounts to a reorganization of labor alongside the deployment of technologies for the mobilization and control of affect. Rhetorical seduction (including verbal as well as non-verbal signs) is the only way to circumvent force. The science of this speculative rhetoric, prefigured over a century ago by Charles Sanders Peirce, has yet to be developed.

Art is our least and greatest hope.

The recent performative turn, a move away from representation and towards a process-oriented view of interpreting events has, for the cultural moment,

established momentum in a wide ranging group of disciplines within the institutions as a way of conceiving and analyzing knowledge production. I have come to agree with an alternative implication that signs are less performative than regulatory, and failing that, persuasive. For my purposes now, it is enough to say that rather than view something called Art as a separate and unique or institutionally bound cultural activity, I have found it useful to think, with Peckham, of artistic behavior as another important mode of behavior *in general*, one that is particularly well suited to meet the demands of a lively world.

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Metastatic Membranes

Modulations of Threshold

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This paper aims at a topological contextualization of architectural ornament and its substrate membrane. A membrane acts as the interface to a building as a technical object (Simondon), yet ornamentation is its aesthetic (Simondon) projection. This synthetic deformation of a building's limits punctuates a large tableau of simultaneous multiplicities including physical systems as well as the social, cultural and symbolic (Banham, Maturana and Varela, Simondon). The potential enunciation of an "ornamented" membrane and the translation of building systems into potential opportunities for public engagement will consider how passive (and active) systems can provoke action through material and immaterial phenomenological interfaces.

In its most common model, an architectural membrane is conceived and designed as a boundary condition between mediums. It is a built ecological condition: understood as a delicate stasis of competing and unstable milieus. The membrane is a negotiation between continuous conditions. In its broadest reaches, it is a system that is, in fact, difficult to trace: a careful reconciliation of a disparation of interruptions to the continuity of a variety of dynamic milieus: the interruption of gravity, the interruption of heat, the interruption of air, water etc. Rather than a spatial boundary, architecture is a momentary reification of a modulated interplay of the perturbed weaves of milieus. Although we tend to privilege the non-human, milieus as modulated by a building skin interface the multiplicities of social, cultural and material systems: a complex, somewhat quasi-biological edification of an ever-concretizing co-structured event, performance and matter.

The synthetic and pliable deformation of a building's limits punctuates a large tableau of simultaneous multiplicities that including physical systems as well as the social, cultural and symbolic. This research takes the work of French philosopher Gilbert Simondon's positions on the technical object and the question of individuation as a process of evolution towards complex technical ensembles. In this particular research, this work is recast in developing an understanding of the condition and nature of complex ornamented systems and their evolving forms through the immaterial conditions of new technologies. Particularly those of interactive, fabrication and programming technologies.

Pneuma develops work based on an expanding scale of related nodes in an environmental setting. From an architectural perspective, this would be to

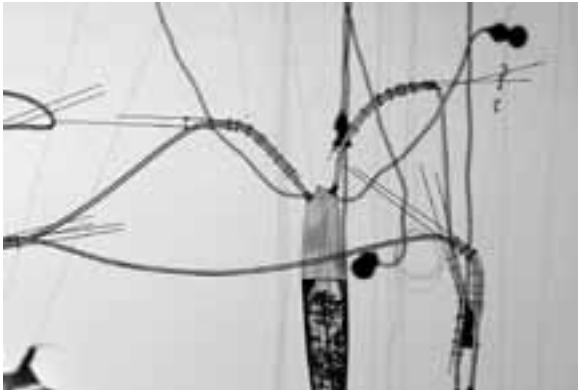


Fig. 1: Plant system: remedios terrarium, Montreal 2008

develop a membrane condition over top of architectural substrates complementary to existing active and passive networks that already form a significant (and long standing) repertoire of environmental mediation. The intent is to develop a further network, with a specific interest in data generated from use and environments both within building systems and external to them, and outside of the canon of traditional architectural sciences. The scales can vary and should be rather flexible from urban, to building, to corporeal and to micro scale.

Pneuma could be considered as a layering of architectural substrate, where network nodes are ornamental (in the traditional sense). This is viewed both in the understanding of ornament as being actuator (a mediator of light, sound etc.) and as a sensor (witness, listener and sensible body). From a material and design perspective, this implies a further level of consideration of the sensor node as an intentional artifact to be crafted and made with artistic intent. Hence, it extends beyond the application of existing electronics to surface and substrate to the actual and suggested materiality (and immateriality) of these sensor / actuators. As a consequence we develop work that explores the potential of sensate and composite materials as a palate of architectural expression: this includes but is not limited to conductive materials, voltage regulation etc.

The electronic and sensate qualities of these nodes also have a potential to extend the physical ornamentation into an immaterial realm of energetic expression (heat, electromagnetism and sound). This recalls a sensibility of understanding architectural ornament as a grotesque or monstrous expression of a static form into the realm of the temporal mediation of space and environment. Again, drawing on the network, we examine temporal and rhythmic scales of light and sound composition in dialogue with these ornaments.

Pneuma is an open source research and project platform. Pneuma's activities include: initiating research, conducting projects, establishing collaborations, developing affiliations and dissemination, formed by Peter Hasdell (Hong Kong) and Patrick Harrop (Winnipeg/Montreal), Pneuma work and projects have been shown in Montreal, Winnipeg and Shanghai.

Looking 'through' Biomedica: Post-Anthropocentrism as Immediacy without Agency

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The current 'molecular turn' and its accompanying 'biologism' has led contemporary artists to effectively construct links to non human 'otherness' while abstracting from previously dominant 'cognitivism'. Biotechnological art that goes beyond metaphors and representation stages the very presence of the manipulated other (animals, plants, plantimals, tissue cultures etc.) in performative displays. By making themselves into Guinea Pigs for biotechnological self-experimentation, inserting (their) genes into plants and bacteria, co-culturing cells or setting up trans-species collaborative situations, artists question models of alterity by the means of producing authentic immediacy.

As opposed to hypermediacy – which in terms of Grusin & Bolter's 'remediation' theory means looking at the media – biomedica itself is most frequently employed in art to look through the media in order to achieve an immediacy of presentation. However, these displays are in turn linked to a network of hypermedial connections and paratextual discourses. Some works may question species barriers, others can be seen as postmodern vanitas – but is non human centered art even possible? This paper addresses volitionally post-anthropocentric art practices and their (in)ability to confer agency to their subjects and objects.

P2

- Scott deLahunta (nl):
Publishing Choreographic Ideas
- Sarah Drury (us):
The World-Producing Body
- Susan Kozel (us), Mia Keinanen (fi/ru), Leena Rouiainen (fi):
IntuiTweet. Corporeal Excavations of Social Networking
- Martin Kusch, Marie-Claude Poulin (qc/ca):
passage – a Hybrid of Interactive Installation
and Performance
- Christopher Salter, Marije Baalman (qc/ca):
SenseStage: Low Cost Open Source Wireless Sensor Infrastructure
for Live Performance and Interactive Real Time Environments
- Nathaniel Stern (us):
Implicit Art (Artist Presentation)
- Sofy Yuditskaya, Valeria Maraco, Damian Frey (us):
Perils of Obedience
- Chris Ziegler (de):
Interfacing Dance Knowledge/DS|DM Installation

Motion Lab

Convened by Scott deLahunta (nl)

“Motion Lab” is a framework for a public discussion of ideas related to performance, movements and media. The Lab features specially invited guests and contributors who present their papers and projects. Motion Lab is facilitated by Scott deLahunta and runs thematically alongside and in association with the “Synchronous Objects, reproduced” installation by Norah Zuniga Shaw.

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Publishing Choreographic Ideas

Abstract:

A growing collection of self-determined reflections on dance practice are being published by choreographers in a variety of formats. Often working in collaboration with researchers, editors and designers, these heterogeneous publication projects make use of text, moving image and more open-ended digital tools and platforms. Many of these projects are either newly available or are in the process of development. In addition to offering practice led contributions to the discourse on dance, they point towards the artist's role in developing alternative forms of documenting, analyzing, notating and archiving contemporary dance.

Part One:

There are several definitions of choreography in Jonathan Burrows' recently published *A Choreographer's Handbook* (Routledge 2010). I cite the first here: "Choreography is a negotiation with the patterns your body is thinking" (p 27). This brief description guides us toward a couple of interesting concepts. If the body is capable of thought, then choreographic thinking may be what happens when one is making dances. Or one could speculate on how choreography emerges from the interaction between an abstract idea and what has been learnt by the body – its patterns. In any case, the conditions of this interaction vary depending on the methods and tools used by the particular choreographer.

How does this all come together in a work of art, the finished dance? Burrows' book, based on his many years of performing, choreographing and teaching, provides wonderful and useful insights into the process of dance making. Thusly, *A Choreographer's Handbook* makes an important contribution to the growing collection of resources dance artists have begun to offer the field. Some are publishing their ideas about choreographic practice, like Burrows, in book format. Some are making film documentaries. Others are combining aspects of text and moving image with more open-ended digital publishing tools and platforms. Whatever the media, there appears to be a

desire on the part of dance artists to inspect their own practice, then share and communicate these ideas to others.

Once published or produced, these resources have the potential to be of use to teachers and students in dance and related arts, as well as educate audiences in new ways. They also bring choreographic ideas into contact with other fields of knowledge and research. For example, *Improvisation Technologies: a tool for the analytical eye*, an multi-media CD-Rom published in 1999 by William Forsythe, generated a great deal of interest in the field of architecture. Its use of graphic annotation on video (see Fig. 1) has also helped cognitive psychologists, anthropologists and other non-arts specialists understand an aspect of choreographic thinking. In 2009, Forsythe followed up *Improvisation Technologies* with the creation of the award winning on-line digital dance score *Synchronous Objects for One Flat Thing, reproduced*.

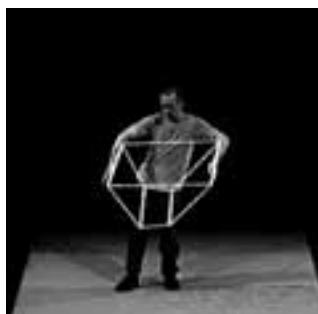


Fig. 1: Still of Forsythe demonstrating Parallel Shear on the *Improvisation Technologies* CD-Rom

In the meantime, other choreographers, some inspired by *Improvisation Technologies*, began to explore the use of digital tools to bring choreographic ideas and processes into newly productive exchanges with audiences, education and other specialist areas. These include Wayne McGregor and Siobhan Davies, both London-based, and Emio Greco/PC in Amsterdam. In 2008, these choreographers and the researchers and designers working on their initiatives came together during a series of workshops entitled "Choreographic Objects: traces and artefacts of physical intelligence." These workshops drew attention to an emergent international 'community of practice' involved in the complex work of publishing choreographic ideas. From this emerging community a variety of important contributions to research areas are in development, including new creation and notation tools, and fresh perspectives on archiving dance [1].

Part Two:

This last decade of activity provides a context for a new collaborative initiative of William Forsythe and The Forsythe Company. The following summarizes the project goals and partners:

Motion Bank is a new four year (2010-2013) project of The Forsythe Company providing a broad context for research into choreographic practice. The

main focus is on the creation of new on-line digital scores in collaboration with selected guest choreographers to be made publicly available via the Motion Bank website. Both these unique score productions and development of related teaching curriculum will be undertaken with and rely on the expertise and experience of key collaborative partners. Public educational activities and events reflecting the diverse issues related to score creation will be offered at The Frankfurt Lab, and will include performances and presentations of the guest choreographers as well as lectures. Workshops and residencies organized with senior scientists and scholars aim to stimulate interdisciplinary research based on questions coming from dance practice. Exchange of information with and support for related projects is facilitated through working groups and associate networks.

Motion Bank Partners:

For the digital score development: the Advanced Computing Center for Art and Design at The Ohio University, the Fraunhofer Institute for Computer Graphics Research IGD, the Hochschule Darmstadt-University of Applied Sciences (h_da) and the Hochschule für Gestaltung (HfG) Offenbach.

For education and workshops: the Frankfurt University of Music and Performing Arts and the Palucca Schule Dresden – Hochschule für Tanz.

For interdisciplinary research: The Berlin School of Mind and Brain – Humboldt University Berlin and the Max Planck Institute for Brain Research Frankfurt.

Motion Bank is supported by the German Federal Cultural Foundation, the Hessische Ministerium für Wissenschaft und Kunst, Kulturfonds Frankfurt RheinMain, the Volkswagen Foundation and Susanne Klatten.

Staff:

Scott deLahunta (Programme and Research Coordinator), Christopher Roman (Productions and Educational Coordinator), Marion Rossi (Production and Administration)

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- *Synchronous Objects for One Flat Thing*, reproduced. URL: synchronousobjects.osu.edu (accessed 29 June 2010)

[1] Other established choreographers publishing works include Meg Stuart, Steve Paxton, Rui Horta and Deborah Hay.

The World-Producing Body

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This presentation explores various frameworks of embodiment at work in performance projects that use sensed movement to control live media. Engaging a cause-and-effect relationship between the physical and the virtual, such performance works propose alternatives to a centralized, unitary notion of embodiment. At the same time, there is a range of different ideas about embodiment across projects and practices, and within each work. My presentation provides the opportunity to sort through these different ideas, and to look at the implications for how these works use interactive technologies to trouble or relieve the vocabularies of embodiment that underlie everyday life.

The frameworks of embodiment discussed include:

- *The body as image, as memory*

In Bergson's framework, the body is a perceptive interface that is also continuous with matter – produced by and producing the world. Reality is comprised of images: perceptual objects. The body, when perceived from the outside, is this kind of image, "continuous with the images of matter". But one's own body is a "privileged center," an image that regulates all other images. Knowledge of matter from the inside moves into the terrain of memory. In interior experience, matter is replaced by memory. [1]

Sensor-based performance projects using a Bergsonian framework of embodiment treat the body-sensor-image as a controller of a database of stored memories. The body's movements access a Proustian narrative: multilinear, multilayered, multichronological.

- *The body as mediation*

Wegenstein's idea of the body as mediation [2] proposes the body itself as the locus of a constant negotiation of images, both internalized and socially projected, in which the body is the edge between inside and outside, self and other, cultural role and individual agency. Wegenstein relates the body as mediating surface to performance/media works that operate critically

within the simulacrum of image culture. Performances that draw on the idea of “the body as mediation” engage the body as a critical surface of image production and negotiation, both wearing and disinvesting itself of culturally circulated images, referencing and commenting on the culture of images that circulate through media and language.

- *The phenomenological body*

In the phenomenological concept of embodiment, the body is outside knowledge [3], but exists as access to experience itself. Inside and outside are not a binary pair, but are understood as a fluid continuum. The phenomenological body privileges presence over memory, with immediate experience as the only possible access to reality. [3]

Projects based on a phenomenological framework of embodiment focus on the relationship between gesture and media as an expression of the continuum between interior and exterior experience, and question the representational image as a wedge between the self and immediate experience, using images as non-critical extensions of the body.

- *The Body Without Organs*

Deleuze and Guattari’s Body Without Organs (BwO) invokes a conception of the body that is disinvested of fantasies, images, projections, representations. But the BwO proposes a very different notion of embodiment, in which the body’s lack of a centralized organizational structure serves a critical function. It is a set of processes, and as such, invokes chaos and fluidity in place of the hierarchical notions of identity that inscribe the subject socially and politically. The fluidities and processes of movement and transformation that describe the BwO imply a continual disintegration and reintegration of embodied coherence [4].

Projects drawing on this notion of embodiment are suggesting that body and image exist in a machinic interrelationship, as fragmentary parts of a never-completed body that fluidly incorporates the other. The image is not a perceptual extension of the body, but is an alienated part that is nonetheless included.

- *Interactional Couplings*

In Francisco Varela’s cognitivist approach, the embodied subject comes into being in a dynamic process of “interactional couplings” with the environment, a “situated” event in which both environment and subject emerge through immediate response to the concrete realities presented by this contact. Like the BwO, the individual subject is an emergent phenomenon, a collection of fragments and processes that “may be brought together, even in a haphazard way, to give rise to what appears to an observer as a purposeful and integrated whole, without the need for central supervision.” [5] However, rather than positing this form of embodiment as a resistance to the centralized subject, Varela draws this model from research in artificial intelligence,

and puts it forward as a pragmatic understanding of cognition itself. Cognition arises by chance as the cognitive agent interacts with its environment. The performer or “cognitive agent” and virtual environment are formed together, in a mutually defining and transforming process. This interaction suggests the mutual creation of self and environment, with the sensed gesture “writing” the graphic environment while the body itself is reframed by this displaced amplification of its actions.

I will use these and other frameworks to explore various performance works and their implications for a contemporary view of embodiment that embraces difference in subjective and social contexts.

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IntuiTweet

Corporeal Excavations of Social
Networking

The *IntuiTweet* project elaborates a dance perspective on Twitter emphasizing corporeal, expressive and aesthetic depth. The act of basing tweets on an intuitive corporeal moment, sending them to a social network, and then re-integrating them into our bodies only to re-tweet the new movement is an example of relational performative engagement through social media. It is also a form of dance improvisation.

Twitter has been both celebrated as a medium to convey our social zeitgeist and dismissed as a fundamentally superficial and disembodied epiphenomenon of social networking. This project began as an impulse to challenge the latter sentiment and to extract depth, physicality and poetry from a pervasive mode of cultural expression. Poets know the power of using a few carefully selected words, visual artists know the power of an image, or even fragment of an image, and dancers need very little to generate haunting improvisations: a word, sound, or colour is sufficient. The *IntuiTweet* project began as an attempt to access and share intuitive moments between three dancer-researchers (Keinanen, Kozel and Rouhiainen) and it has expanded both artistically and philosophically. This presentation will provide a glimpse into the current stage of artistic research, briefly describing three modalities of performance and some emerging philosophical thoughts.

Three Modalities of Performance

The first modality of performance is the Immanent *Performance of Everyday Life* by which micro and somatic moments are enhanced and shared through Twitter. These can best be described as periods of structured improvisations. At the time of writing this text four improvisations have taken place over the course of a year. Only once were the dancers co-located in a single city. The

third and fourth improvisations integrated TwitPic and YouTube for visual material, affirming that a fragment of movement intuition could be captured not just through words but through images.

Most of the improvisation occurred in public places (streets, public transit, workplaces) or in private homes as we went about our daily lives in our separate cities and countries. Some access to dance studios was available but the performance component was very much that of everyday life. The tweets generated are like performative scripts useful both for future improvisations and acting as archives or traces of past movement. Future and past dimensions coincide.

The second and third modalities relate to performances that are still being developed out of the improvisations just described. The second modality is called a *Participatory Performance with Dancers*. This is an open composition in a theatre space combining the improvisations of participants and dancers. Material from the prior improvisations will be integrated, both visual and textual, along with material generated by dancers and audience/participants at the time of performance. The intent is to make the space of the theatre porous by means of the social media.

The third performance modality is a *Participatory Performance across Multiple Social Networking Platforms*. This performance model integrates various forms of social media over a period of weeks or months in order to build a community of performers. The space of social networking will be punctuated by several site specific moments where the mediated corporeal exchanges will be anchored, almost unveiled, by the grounding in a shared physical space. There will be no dancers separate from the participants.

Philosophical strands

IntuiTweet exemplifies and extends some principles of Relational Aesthetics, drawing this approach to contemporary art from the 1990s into dialogue with current participatory performance and media practices. Asserting that art is a state of encounter, and that intersubjectivity is not just the context but is the work itself, the relational approach to aesthetics is strongly relevant to artistic practices using mobile social media (Bourriaud 2002). Yet there is more depth and poetry to this work than relationality.

In the recent première of *Dawn* (2010) composed by Franck Krawczyk for Christian Boltanski's installation *No Man's Land* (Park Avenue Armory, New York City) audience members were invited to record the concert using their hand held devices and upload the files so that these could later be merged into a collective composition. The care and delight with which people used their devices during the 90 minute piece were striking. The individual perceptual moments were not lost in the collective of relationality, they made up the fabric of the larger, shifting whole. Phenomenology makes up an important basis for *IntuiTweet*: how fragile and fleeting moments of embodied living in the world can be captured, shared and woven into an artistic experience that in turn expands as other voices and other bodies filter, interpret and forget those earlier moments.

Marc Augé writes, forgetting is essential to remembering, it is through oblivion that we can hold onto anything at all and find a place in the world (Augé 2004). This is as true of personal narratives as it is of bodily memories, our social media does not dilute or transform this dynamic: with our shared media, we preserve and forget, excavate intuition and free it to evaporate or be distilled in another's body.

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passage
- a Hybrid of
Interactive Installation
and Performance

Context

As an interdisciplinary production group we are exploring modes of representation that incorporate choreography and media arts, and lie at the border between installation and spectacle. We are interested in the artistic process as much as the artistic product. One of our objectives is to develop strategies and methodologies for artistic expression using new technologies in the live arts and to foster the integration of expressive systems as tools for creation in the performing arts disciplines. The work with new media and our multiple experiences creating interactive dance performances inspired us to produce an installation integrating live performance, in which the spectator is invited to actually “use” the body of the performer as the interface to the media environment.

passage

is a performance-installation project with one performer, a visual artist and a sound artist. It is a practical research into the possibilities created by blurring the boundaries between active performers and passive spectators. It explores varying states of intimacy and proximity, with the goal to create an artwork that oscillates between interactive installation and performance. The project incorporates dance performance, choreography, improvisation and a dynamic and responsive media environment. The media environment is transformed by continuous live input from multiple users – the spectators – via a series of wireless sensors attached and distributed both on the costume of a performer and throughout the installation environment. The work is accessible to visitors for approx. three hours per day. With passage we propose a situation where the spectator’s participation plays a role in the shaping of events. By manipulating the sensors on the body of the performer and/or on the objects in the space, the visitors are invited to manipulate the sound, image and lights in real-time. The distributed sensors register movement, proximity, touch and pressure. The technical set-up consists of two wireless sensor systems, three computers, a wireless microphone, a multi-channel sound system, three video-projectors, a motorized mirror, lighting and the max/msp software.

During the performance, the performer solicits the participation of the public with the help of specific actions marked by an attitude of availability, invitation and at times retraction. The spectators have the choice of participating and collaborating, or of positioning themselves more as observers.

In the absence of intervention, the environment transforms only in relation to the performer's movements. However, in response to interventions, the transformations of the environment are clearly manifested and the visitor's actions provoke a shift in the installation environment. These fluctuations in ambiance lead the performer to move to another state, which she does by drawing from a bank of movements and pre-determined performative modes.

The elements of passage are constructed around ten separate but interrelating scenes and motifs. Each of these scenes are articulated around a specific state of the performer, in combination with a distinct image and sound environment. They each deal in a particular way with the themes of social interaction, intimacy and observation. The relations between media space, performer and public are developed and executed in an improvisational manner. To be able to modify the audio-visual thread live we developed a compositional grid, a score, for the distribution of the interactive parameters and the management of the data.

By working with the contrasts between solicitation and retraction, passage deals with playfulness and mutuality and explores the notions of exchange and collaboration, the boundaries between beings and their environments. We create a situation that questions the visitor on his relationship to his own body, and by offering the body of a dancer as the ground for exploration we play with the limit of discomfort. Actively implicated and possibly confronted by our artistic proposition, the spectator finds himself at once subject and object.

The fact that this project takes the form of a hybrid between performance and installation brings us to reflect on the notion of temporality. How can it be organized in an installation, in which multiple users can engage and where, at the same time, a performance takes place?

We have attempted to answer this question by exploring and structuring the temporal organization of the separate scenes in a non-linear way. At some moments the order is pre-determined at other moments the visitor's actions determine what follows what, all taking place in an environment where the performer, the visual artist and the sound artist make use of various improvisation strategies.

One of the issues is how to lead the visitor to enter into a relationship with the dancer and his environment. A determining factor for the outcome of each performance is the visitor's capacity to listen and to observe, together with the capacity to communicate and to collaborate. The relationships developed between the visitors, the performer and the environment are one of the central elements. The nature of these relationships shifts between: dialogue, confrontation, collaboration, domination and game.

passage is a work about freedom of choice, intimacy and privacy, participation and connectivity; it provides a reflection about the perception of our bodies and our mediated presence inside networked societies.

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SenseStage: Low Cost Open Source Wireless Sensor Infrastructure for Live Performance and Interactive Real Time Environments

SenseStage is a research-creation project to develop small, low cost and low power wireless sensor hardware together with software infrastructure specifically for use in live theater, dance and music performance as well as for the design of interactive, real-time environments involving distributed, heterogeneous sensing modalities.

The project consists of three components:

- a series of small, battery powered wireless PCBs that can acquire and transmit input from a range of analog and digital sensors.
- an open source software environment that enables the real-time sharing of such sensor data among designers and
- plug in modules that enable the analysis of such sensor data streams in order to provide building blocks for the generation of complex dynamics for output media.

The project emerged from a desire to address a novel, emerging research field: distributed, wireless sensing networks for real-time composition using many forms of output media including sound, video, lighting, mechatronic and actuation devices and similar. The design of interactive environments using diverse output media increasingly involves the mapping of many channels of real-time sensor data to control the temporal behavior of such media. Standard mapping techniques with sensors that have been derived from the "instrument building" paradigm, usually address only small numbers of sensors or participants and may not scale well to larger spaces. Systems involv-

ing large numbers of sensors and participants are rare, custom-designed, and expensive.

Furthermore, while wireless sensors and wireless sensor networks (WSNs) are being increasingly deployed daily in areas such as health care, defense, seismology and home security, there are scant examples of such technologies in artistic projects simply due to the lack of available hardware/software infrastructure for artists to use. Most work in sensor networks has been in areas of applied technology development without artistic aims or is restricted to lab settings. Based on these factors, SenseStage has developed a fully integrated hardware and software infrastructure that is intuitive to use by artists and designers, is scaleable to many nodes and performs data acquisition, transmission, conditioning, sharing and compositional tasks all within the same system.

Three specific factors have motivated the SenseStage project:

1) Economic and technical constraints of live performance:

While there is increasing interest in the use of sensing technologies in live performance contexts (particularly theater, dance and music-theater), the economic and cultural constraints of live performance make the integration and use of such experimental technologies difficult. Long rehearsal periods and proper technical infrastructure necessary to test and use sensing systems are prohibitively expensive for artists and cultural institutions. This is particularly evident in the extremely short technical integration periods ("tech week" or "technical rehearsals") that are customary for theater, dance and music. Thus, the use of many sensing devices and software tools needs to be conditioned by flexibility, minimal preshow setup time, quick deployment and use within a variety of stage or exhibition conditions.

2) Lack of tools for artistic use:

As previously stated, SenseStage emerged from a desire to address the emerging research field of ubiquitous computing within the artistic, real-time context of live performance and interactive environments. Although many groups are currently researching and developing WSNs, design decisions are normally motivated by engineering innovations thus leading to efficient yet, prohibitively expensive and complex systems out of the reach of artists. Furthermore, as will be detailed below, despite the high number of research initiatives currently taking place, there are disappointingly few wireless sensing platforms that are actually available for real world use or that are cost effective. In addition, there is a lack of software tools for interacting easily with the large amount of data produced by such distributed wireless systems, especially tools implemented in lingua franca programming languages and environments used by musicians, sound and media artists such as Processing, Max/MSP/Jitter, Supercollider, PureData and other environments supporting OpenSoundControl (OSC). SenseStage seeks to develop a technological framework that eases the exchange of data between many diverse programming environments used for interactive sound and media projects in order that artists and designers with diverse practices can work efficiently

on complex interactive projects in both development (i.e., rehearsal) and performance stages.

3) Real world testing scenarios:

Much of the research agenda for the project was driven by many years of artistic work and technological development of tools to facilitate the creation of interactive performances and installations with distributed sensing and which used mapping of such input data to complex parameter spaces for the control of sound and other media in real-time. A key design element of the SenseStage project is thus to deploy SenseStage technologies into real world, professionally driven testing environments to see how such tools function “in the wild” and outside of the standard lab, demo-driven mode normally given to the presentation of new technologies.

Implicit Art (Artist Presentation)

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In his *Parables for the Virtual*, Brian Massumi calls for “movement, sensation, and qualities of experience” to be put back into our understandings of embodiment and culture (2002, 4). He says that our dominant modes of comprehension are almost exclusively visual and linguistic. Massumi wants to instead “engage with continuity,” to encourage a processual, active, sensory and relational approach to the world (Ibid, 27).

As an artist, I’m similarly concerned with how categories such as ‘body,’ ‘language,’ ‘vision’ or ‘space’ are often presupposed in contemporary culture, and hope to foster greater dialogue around these complex systems and their relationships to affect and meaning-making. Most specifically I ask, ‘How might the body’s continuity, and its potential disruption, be attendant, provoked and contextualized in contemporary art?’

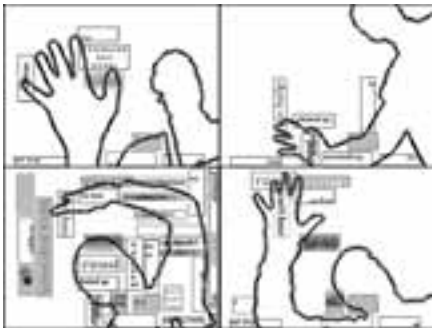


Fig. 1: *stuttering* (4 screen grabs), 2003/2009, size variable

For example, in my interactive installation, *stuttering*, viewers-turned-participants use their entire bodies to touch and trigger invisible activation points laid out in a Mondrian-styled grid. Each rectangle in the work’s projected



Fig. 2: 'Compressionism' – scanning water lilies in Indiana, Jesse Egan, 2009



Fig. 3: Giverny of the Midwest (detail), in progress, 2 x 12 meters

image is filled with animated text and spoken word. The saturation of these 'virtual buttons' creates an inverse relationship: move quickly, and the piece will itself stutter in a barrage of audiovisual verbiage; move carefully, even cautiously – *stutter with your body* – and both meaning and bodies emerge.

In my *Compressionism* series of prints, I strap a desktop scanner, laptop and custom battery pack to my body, and perform images into existence. I might scan in straight, long lines across tables, tie the scanner around my neck and swing over flowers, do pogo-like gestures over bricks, or just follow the wind over water lilies in a pond. The dynamism of my relationship to the landscape is transformed into beautiful and quirky renderings, which are re-stretched and colored on my laptop, then produced as archival art objects using photographic or traditional processes.

Here I 'per-form' the landscape to challenge notions of a 'pre-formed' world, or sense, or meaning. By engaging with the unfinished and in-process within my work, I seek to challenge the nature of what is 'given.'



Fig. 4: performance 2 (passage) – a Sentimental Construction, 2007

And my *Sentimental Constructions* are site-specific architectural structures made of rope, built to scale and held up by live performers. These move between hard and soft, virtual and actual, public and private. Each twists

the idea of 'public place' by its double activation: first, through the volunteers who physically stretch the form outward and around them; and second, through the communal play of the onlookers-turned-participants, who give the piece an/other performative turn. Active and activated people render 'meaning' and 'use' as transductions, continuous formations in and around one another. *Sentimental Constructions* are CC-licensed, encouraging international contributors (in Croatia and South Africa so far) to re-make and re-define their own public places.

In sum, my art engages movement, sensation and qualities of experience to refigure fixed signifiers as affective and dynamic encounters.

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Perils of Obedience

Perils of Obedience was an interactive dance piece that first took place at the “Fête de la musique 2009” in Paris, France. It is a generative audio and dance re-enactment of the Milgram Experiment.

A person dressed with the accouterments, and speaking in the languages of both experimenter and ringleader stands on the street with a mike in her hand. She entreats passers-by and on-lookers to become participants in the performance. The willing participant is given a control interface made from 1950’s British military surplus. Note that the salvaged components were originally made and used for export to Austria post-WW II, the materials used for the apparatus are a material aspect of re-appropriation of various modes of authority.

In the control interface we see what was once secret and powerful, and used as part of the war machine, now cast aside, and made available as scrap to the general public. Though the technology used to re-appropriate the piece is not available without some dedication to learning how to use it, it has the smack of bricolage in the way that it looks. The apparatus itself has been neutralized, almost rendered nostalgic, by the passage of time.

With this appropriated interface the Participant/Viewer now generates the audio, and the movements of the dancer. The intensity of the music, and the intensity of the dancer’s movements are directly guided by the Participant/Viewer’s turns of the knobs on the control interface. All members of the performance know, because they are told by the Author, that the Dancer is following instructions of her own free will. She can stop at any point. Part of the performance is of course for her to act as if she can’t and for everyone else to consent to that.

The re-enactment transposes the roles in the original Milgram experiment, from Experimenter, Actor and Subject to Author, Dancer, and Viewer/Participant respectively. The goal of the performance being to push the limits of the authority of the spectacle.

This performance is meant to happen in the street, but under special circumstances. The “Fête de la musique” for example, transforms the ordinary

street into a special site for performance, by virtue of being a day where, by mass consensus, the street is declared to be a stage and used as such. The "Fête de la musique" is an institution unaccompanied by edifice. This gives the site a vague spectacular designation and the effect, if not the actual fact of being a temporary autonomous zone, which is very desirable for conducting experiments concerning the power of the spectacle.

The impetus for making this project came from a desire for making jest towards scientific as well as artistic authority. Stanley Milgram used actors in his original experiment, he himself acted out the role of authority figure to coerce a body of data. The Milgram Experiment is beautiful to us because it uses acting, consensus, apparatus to create scientific fact, and uses the scientific apparatus to inspire fear and belief. Likewise we are using acting, consensus and apparatus to create music, dance, performance, dialogue, and even the very space for presenting it.

Another theme of the project comes from the question "At what point does the pantomime of danger become danger itself?" In art, and theater, we are given the option of trying on different social hats without too much risk. Even when a spectator would steer the Dancer into the path of an oncoming vehicle, putting her at risk, or some other such situation, he would often simply return the controller to the Author, disengaging from the situation. When we make a similar commitment, for example to steer troops into battle, a team on a project, etc, we cannot disengage so easily, but there is also a myriad of bureaucratic contraptions in place to distance us from our subjects. Of course when a disaster happens, these contraptions often fall apart.

As with the BP Catastrophe (still raging strong at the time of the writing of this text), bureaucratic contraptions muddy the waters of outside perceptions, and distance humanity from the poetic destruction that it has wrought upon itself. The Perils Of Obedience is an art piece, that tries to embody bureaucratized violence. The theatrical way in which it is dealt with speaks back to the tradition of the Grand Guignol, rather than the spectacles of bureaucratized violence and disaster as the BP Catastrophe.

In Perils Of Obedience, we have collapsed all the actions involved in the fragmentation of building up a power structure into four essential roles, all occupied by human beings. We've slightly transposed our humanity through the performance. Abstracting our bodies from their actions. Playing out the age old tale of authority while leaving our bodies exposed to the street and each other. It requires the cooperation of everyone, the Author, the Dancer, the Audience and the Participant/Viewer, and the Apparatus/Prop, for the story to play out, and have a picture perfect ending.

We used an arduino micro-controller (see arduino.cc) to push the dancer in 6 directions in space. This would cause vibration motors to actuate when the knobs on the control board were turned. This would also send signals to our Pure Data (see puredata.info) patch, written and composed by Damien Frey to affect the audio of the piece.

Interfacing Dance Knowledge/DS|DM Installation

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DS|DM Installation

“Double Skin/Double Mind” (DSIDM) is an awareness preparation workshop for professional dancers, developed by the Amsterdam based dance company Emio Greco I PC since 1996.

The Interactive Installation is a virtual version of the workshop. The installation offers participants the possibility to take part in a virtual version of the workshop in real time, while receiving verbal, physical and peripheral information. The design consists of an aluminum frame construction with one projection screen, 3 peripheral monitors, four sound speakers and a tracking camera with Infra Red projectors- surrounding the participant. The movement – tracking program “Gesture Follower” (GF) developed by Frédéric Bevilacqua (IRCAM), compares the data of the filmed version of the workshop with the real time data of the participant’s movements. As result of this comparison, different forms of feedback are given: sonification, visualization and music will accompany the participant while mentally and physically traveling through the Double Skin/Double Mind structure.
ICKAmsterdam

The installation was initiated 2006 by Bertha Bermudez (EGIPC), Frederique Bevilacqua (IRCAM) and Chris Ziegler (ZKM Karlsruhe) during the notation research project “Capturing Intention”. At the end of 2007 Emio Greco I PC released a book, a film documentary (made by Maite Bermudez) and the DSIDM DVD-ROM. A demonstrative version of the installation traveled through festivals in Holland in that time.

In 2008 a two-year collaborative research project Inside Movement Knowledge (IMK) went into new methods for documentation, transmission and

preservation of contemporary dance knowledge. In IMK we developed and tested the professional version of DSIDM installation inside the AHK Amsterdam dance program with dance students and teachers conducting several labs until May 2010. From 2011 onwards the installation will be included in the curriculum of the AHK's dance training program.

An environment for dance training

In DSIDM we had the means of tracking qualities of motion. The software was originally developed to relate hand gestures of a conductor to electronic music. In DSIDM we used it to analyze dance movement to improve movement qualities with specific sound feedback and visual information. After I participated in the "real" sweat away DSIDM workshop, it was obvious that we need a dedicated space for physical training.

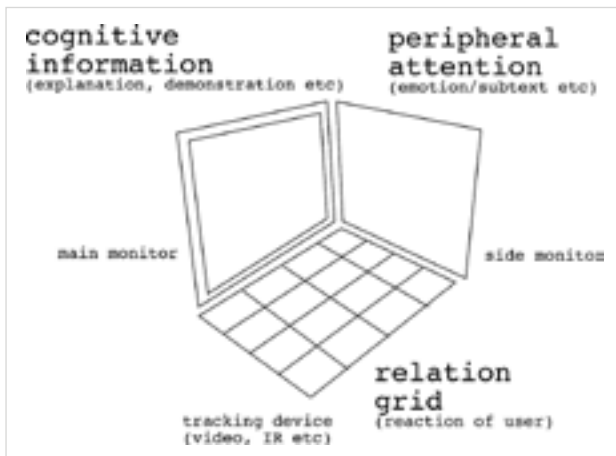


Fig. 1: DSIDM installation sketch Photo: Chris Ziegler

Architecture of attention/affiliation

With a sketch of a "Sensational Interface" I laid out an idea of expanding the CD-ROM of DSIDM for an immersive learning environment. We had to reach the body in his best sensorial interface: in a workshop situation. The body needs physical training to learn DSIDM's movement qualities.

The hybrid character of new media tools on stage creates new ways of expressing movements by sound, video and light, but on the other hand it very often restricts possible moves to "read" movement information.

Level A: Workshop

The introduction is a linear workshop in space and time, recreating the situation of a "normal" workshop, using the big screen in front of the dancer to offer a teaching situation to which he is used to. In that level Emilio Greco gives a virtual dance training workshop for awareness preparation, mixing verbal commands with physical movement instructions.



Fig. 2: DS|DM installation with Bertha Bermudez (Emio Greco|PC) Photo: Thomas Lenden

Level B: Learn

In level B we split the DSIDM holistic workshop experience into one source representing the body of Emio Greco in the main screen and a “talking head” monitor in the left upper corner of the cube to give more specific verbal instructions by Emio Greco – and Pieter C. Scholten. On the sides we display close-up views on body parts to steer the attention to specific movement qualities in body parts.

The GF software analyzes the movement of a dancer and displays the body silhouette. The DSIDM software creates an internal model of the body by capturing the movement of extremities with bounding boxes and using the gravity center of the body.

Level C: Customize

Learning is a process of appropriation. Thus I designed, with Martin Bellardi – programmer of the installation interface – a way of accessing the structure of the lectures. A customization interface gives access on all levels and all chapters. The user can change settings, which are pre-set for level B. The DSIDM installation, reconstructing a dance workshop in level A, separating chapters in level B is turning DSIDM into a digital tool in level C.

Level D: Play/Create

After learning, there is rehearsal there might be creation: A dancer is requested to use DSIDM’s dance qualities in his own way. Sarah Fdili Alaoui (IRCAM) created a visual and sounding moving object for a virtual pas-de-deux. The DSIDM installation constantly analyzes the dancers movement qualities and feeds a movement and sonification dialog.

Interfacing dance knowledge

From IT to DSIDM it feels like concluding a circle: From cognition to emotion, from architecture to atmosphere. Talking about qualities and intention in dance is difficult enough, trying to capture them with digital tools sounds even more challenging.

P3

Appropriating Social Media

- Robert Sakrowski, Sven Bäucker (de):
Curating Youtube Box [CYB]

- Birgit Richard (de):
■ YouTube Favorites = Media Masters

- Marion Walton (za):
Mobile Republic. Visual Approaches to Discourse in South
African Mobile Social Networks

- Sabine Himmelsbach (de):
Art and Politics. The Edith Russ Site for Media Art: A Space
for Presentation and Production of Media Art

Social networks and mobile communication are changing both the way the internet is used, and its status as a site and a medium of social engagement. The presentations in this panel deal with practical and artistic uses of the new communication tools and point to their potential for critical reflexion and social change.

Robert Sakrowski (de)Art Historian and Curator
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Designer and Architect
sb@curatingyoutube.net**Curating Youtube Box
[CYB]**

Curating Youtube Box [CYB] fills an important void in the modern art business by facilitating a meaningful reaction with regards to contemporary Web 2.0 phenomena such as user generated content. Following the principles of A SPACE INSIDE A SPACE, CYB may easily be installed in the context of a museum, a gallery, a studio or an art fair. CYB enables curators and scientists to present net videos in a format that is adequate to the art business. CYB will be mailed to the interested institutions upon request. The net videos presented in the various exhibitions will be presented in their original size, using apt players and thereby creating a feeling of "authenticity". The players will be able to present online streams as well as pre-configured offline shows, such as looped playlists. The players will be, due to their user-friendly interface and their broad acceptance, easily controlled by the audience. The possibility of interactions is an integral part of the entire project – To facilitate this, an autonomous tablet computer, offering access to a research database system, will be integrated into the CYB. Using this tablet computer, local curators can fulfill administrative tasks such as the configuration and controlling of exhibitions and secondary materials or the integration of supplementary materials such as texts, portraits, interviews, source studies etc. Visitors can log into the blog system and participate directly (by creating personal playlists, adding comments and links, etc.). Such a presentation enables the curators to make extensive explanation, comments and background information to the individual pieces as well as the overall concepts using text and images.

The project presented was informed by the following considerations, which cannot be discussed in full in this context:

- The design vocabulary that develops in the net is creating its own syntax and its own semantics by means of the usage of the medium. In this way, aesthetic statements are formulated that concur with a world changed by the presence of the net, since they were formulated in the medium that changes this world itself.
- In the design vocabulary of the Web 2.0, characterized by the combination of various elements such as texts, images, movies, sounds, icons and

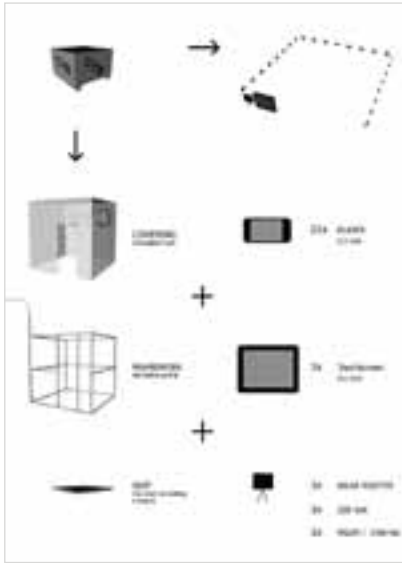


Fig. 1: CuratingYoutubeBox module



Fig. 2: CuratingYoutubeBox general view

formal language elements, procedural entities (such as the continuous re-workings, media-based translations and extension of net videos) are being formulated and created. These collective, multi-media structures are formed following social, technical, economical and, most of all, aesthetic criteria.

- Aesthetic formulations inside the net play an important role during the process of creating the meaning of culturally relevant terms such as identity, subject, sociability, private, original, capital, etc. They directly influence the discussion inside a society, since a clear distinction between the virtual and the real world can no longer be made.
- The participative character of the design vocabulary turns every use of it into a social activity as well as into an aesthetic self-realization.
- Aesthetic formulations inside the net are imbued with an artistic expression, which, even if they are normally not intended as art works, is as strong as that of the works of canonized artists, if not even stronger.
- Museums are under a cultural obligation to follow, facilitate and communicate the ongoing aesthetic definition and the discussions surrounding the terms that are the corner stones of our culture.

The CYB offers a framework that enables museums to integrate these aspects of our modern culture into their exhibition practice. Today, the internet dominates most relevant areas of our societies – but the net art phenomena have not yet made real inways into the art business. Upon invitation, CYB will actively bring these new net art phenomena into the art scene. The net will spread across the relevant white cube(s) (gallery spaces, museums). The transparent skin of the CYB creates an autonomous structure interfacing with the overlying strata of meaning.

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YouTube Favorites = Media Masters

This paper outlines a basic research on visual media culture (a triangulation of media structure- and iconographic research) of the presented online video platform: product analysis of clips with focus on the media structure, analyzing the creative handling of images and the deviations and differences of pre-set media formats and stereotypes by young users.

Web 2.0's communication mainly works through images. The video host YouTube uses this form of visual communication and makes art forms of western societies visible through their online videos especially for young users that provide nearly 75% of the visual content. Generally, a coexistence of different perspectives is possible. YouTube allows polysemic and polyvalent views on the everyday and media phenomena.

The YouTube research (www.birgitrichard.de) started 2006 at the New Media Department of the Goethe University of Frankfurt. The results of the research have already worked out representative forms and basic patterns, as to say, categories for the clips appearing here. These kinds of clips, recurring in the observation period, have an impact on the basic representation of art or the artistic expression within moving images on this platform. Methodologically the focus leads to the investigation (which has to be adequate to the specifics of the medium = as to say media adequate) of new visual structures and forms which can create – consciously or unconsciously – an art form.

YouTube-Research: evaluation methods and clip categories

The examination of YouTube (as well as the photographic community flickr.com, cf. /Richard/Grünwald/Ruhl 2007) makes it necessary to sketch a method of evaluation and classification, which is adequate for this special social-aesthetic online phenomenon. Lacking interpretative neutral methods, a mimetic (Amann/Hirschauer 1997:20) form of scientific research is to be aspired, in which the examiners are adjusting to the field, and at the same

time develop empirically founded knowledge about the special cultural system. It is a challenge to obtain basic patterns of artistic representation, which can be categorized with help of the current research project on YouTube and which stay stable categories, despite the constant change of content. This opens up the possibility to refine a typology of representational patterns and conventions. For this goal a double approach seems to be promising: on one hand by means of a representative evaluation, which gives an idea of the quantity of a certain type of video, and on the other hand on behalf of a quality based evaluation by means of selected case studies (see the concept of key-images [in German: Schlüsselbilder] and relational image-



Fig. 1: misheard lyrics 1



Fig. 2: misheard lyrics 2

clusters by Richard/Zaremba 2007).

A degree-model, developed for the examination of the imagery universe of the Web 2.0, shows the state of the art of research in the following steps:

1. Denomination of the most important tags
2. Parallel evaluation of material on three search modalities:
 - a. through one or several tags. The automated search concentrates on the titles of the clips and the user-given tags.
 - b. on a basis of random checks and within an associative selection of a mind map, as an associative search of synonyms within the content of reference; also looking at the variations of the same user (as author/artist) or related videos (an automatically software generated connection).
 - c. through social bookmarking, looking at user's favorites and following user's recommendations and discussions of videos.
3. Investigation of the tags on behalf of a selection by topic in the found material. The search with tags should lead through step by step condensation of the clip material to the specific case analysis.
4. Selecting the representative clips first according to the frequency of their occurrence and by viewing the content too, sorting them into groups.
5. Choice and creation of the key images of the selected prototypical clips for the analysis.



Fig. 3: prairie dog drama

6. The construction of an imagery based clip-typology and the search for divergences of the aesthetic average/stereotypes of the platform, looking for a special artistic quality.

7. Creation of related image clusters following the analysis of the specific nature of images. The concluding statements about the basic patterns in the artistic representation are made at first according to the frequency of their occurrence and then in the next step by analyzing the clips in case studies.

The clip categories, which were developed within the focus of the Frankfurt visual media culture research (www.birgitrichard.de) grasp and extract the basic structures of the platform.

In which way is the modality of this media based image-production with respect to the categories describable? Besides the function of self representation it always gives tribute to the communication of the individual within its community. It opens up possibilities for users to shape the appearance of a particular project via download, editing, and through inserting text, pictures, audio or found footage. Relating to the Web 2.0 this means: the clips as well as the raw material are per se reactive, the user clicks to play them, which doesn't make them interactive. But they function as an active inspiration for users to produce their own responses and participate.

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Mobile Republic: Visual Approaches to Discourse in South African Mobile Social Networks

Social networks are believed to broaden participation and deepen democracy, but may play a role in reproducing social divisions. This project highlights the differences between computer users, whose social network use constitutes a form of mediated public, and mobile-centric users (Donner and Gitau, 2009) who primarily access the Internet via their phones, and whose contributions often remain digitally invisible. Mobile social networks serve a growing number of people with limited or no access to computers, who use their mobile phones as a primary form of Internet access, and who often do not use the platforms popular among computer-users. Differences in platform thus inscribe race, class, urban-rural and national divisions.

Mobile republic

In South Africa, landlines and computer-based Internet access have been the preserve of a small monied elite. Computer-based social networks (such as Facebook or Twitter) serve only an influential 4% of the population. In contrast, for many young residents of the urban townships of South Africa, the Internet is most accessible via a mobile phone. While many may have heard of Facebook, they are currently more likely to use other Internet-based social networks such as MXit, a low cost mobile instant messaging (IM) application which claims 15 million registered users in South Africa.

While MXit and its competitors (e.g. Mig33, 2Go) have made affordable mobile communication accessible to millions, the lower social status of mobile-centric users is reflected in the relative invisibility of their conversations. From the perspective of public communication, they can also be seen as the 'second-class carriages' of online communication.

On MXit and other South African mobile social networking and instant messaging services, transient mobile chats and IM sessions are not

archived, aggregated, or searchable. Much mobile discourse is thus effectively rendered digitally invisible and seldom makes its way into the broader public sphere or the networked archive. Content and conversations hosted by mobile-centric social networks are not linked to elite social networks, nor are they archived in search engine indexes, and they are also not taken into account by social ranking, recommendation and bookmarking systems. This is not necessarily only a negative trend (since visibility brings with it issues of privacy and surveillance). While Facebook users are concerned about the erosion of their privacy, mobile-mediated discourse is erased from the public record.



Fig. 1: Social distance in geocoded images of Guguletu

Public Sphere: South Africans talking politics

During the 2009 South African national elections, many citizens participated in online debates and political meetings via their mobile phones (Walton and Donner, 2009). Unlike the 2009 Iran elections, where social media communicated the crisis to a global public, the transient conversations of mobile using South African voters took place in read-write-erase mode, and there is almost no record of the powerful engagement in the democratic process which took place in such mobile spaces.

Social Fabric: 'race' in social networking

Applications such as MXit are not simply social networks, which connect people already known to one another, but are also used for social networking, where people use the Internet to make new contacts.

South African social networks are characterised by deep ethnic divisions, entrenched after centuries of colonial rule and four decades of apartheid, when even intimate sexual, marital and familial connections were legislated by overtly racist apartheid laws such as the Immorality Act and the Group Areas Act. In the absence of pictures, the usual abrupt chatroom greeting on Mxit is a variant on the global ASL ('what is your age, sex, location'), becoming 'ASLR' ('what is your age, sex, location, race') on MXit (Bosch, 2008). 'Social Fabric' visualises race and gender in personals ads posted to MXit and points to the intransigence of racial thinking.

Social distancing in mobile and digital photography

Access inequalities mean that tourist images of marginal regions currently dominate social aggregators. Figure 1 shows how geocoded tourist photos posted from Guguletu to Flickr favour impersonal distances in choices of shot scale, while photos posted from the same area to local mobile platform The Grid are personal and intimate.

Conclusion

Digital 'invisibility', while not entirely negative, does limit ordinary people's ability to influence public agendas, and to make potentially important connections (whether intimate, personal, professional or civic in nature) with people outside their immediate environment. Mobile networks are currently not designed to make these connections, and this project shows some ways in which mobile users are attempting to make them. The current absence of such mobile users from elite networks and aggregators is a significant silence.

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Art and Politics

**The Edith Russ Site for Media Art:
A Space for Presentation and Production
of Media Art**

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The Edith Russ Site for Media Art is an art institution dedicated to the presentation and discussion of media art. In 1993 school teacher Edith Russ made an endowment to the city of Oldenburg associated with the demand that an institution is going to be established, that focuses on “art on the transition of the 21st century”. With its focus on art and media the Edith Russ Site has an outstanding position in the German museum landscape. It’s a



Fig. 1: Masaki Fujihata, *Simultaneous Echoes*, 2009 Photo: Franz Wamhof

place for presentation and communication, dealing with the use and reflection of media in contemporary art practice as well as the increasing digitisation and virtualization of our society and the influence of media on our lives. In a regularly changing exhibition program innovative and experimental positions in contemporary (media) art are shown.

With its international residency program the Edith Russ Site for Media Art also has gained reputation as a place for the production of media art. Supported by the Foundation of Lower Saxony, every year three residencies are allocated to artists for the production of a new work. The call for projects is very open and does not distinguish between different categories, because many works are using an interdisciplinary approach. The open structure allows the production of different forms of media based art – from interactive works to software based projects, from sound installations to performative events.

The presentation will show examples from exhibitions (e.g. *Ecomedia_Ecological Strategies in Today's Art*, *I-Machine_Robots Performance Fashion Film*, *Landscape 2.0_Reality and Artificiality of the Landscape*) and projects commissioned or produced at the Edith Russ Site for Media Art (e.g. *Sine Wave Orchestra*, *Eddo Stern*, *Cornelia Sollfrank*, *uebermorgen.com*, *Petko Dourmana*, *Jens Brand*).



Fig. 2: Petko Dourmana, *Post Global Warming Survival Kit*, 2008 Photo: Franz Wamhof

The presentation also focuses on the current exhibition *MyWar. Participation in an age of conflict*, a collaboration between FACT in Liverpool and Edith Russ Site for Media Art which is co-curated by Andreas Broeckmann, Heather Corcoran and Sabine Himmelsbach. The exhibition presents contemporary artworks that explore different ways of implication in current or historic wars by degrees of mediation. It tries to pinpoint the moral dilemmas that emerge from the ubiquity of the war condition, and to differentiate between the different levels of implication. The exhibition follows two separate threads. In the first of these, the artists adopt a radically individualistic approach to war. In the second thread of the exhibition, artists directly engage

with the way in which web technologies have infiltrated and influenced global wars. Examples will include works by Harun Farocki, Oliver Laric, S.W.A.M.P, Thomson & Craighead, Milica Tomić and others.



Fig. 3: Milica Tomić, One day, instead of one night, a burst of machine-gun fire will flash, if light cannot come otherwise, 2009

P 4

Heavy Matter

**Hosted by KHM
(Academy of Media Arts Cologne)**

Kunsthochschule
für Medien Köln
Academy of
Media Arts Cologne

■ **Monika Wagner (de):**
Materiality, Mediality and Concepts of Touch

■ **Marta de Menezes (pt):**
Biology as a New Art Medium and Its Possible Implications
in Art Research

■ **Leah Buechley (us):**
Technology, Materiality and Aesthetics

■ **Georg Vrachliotis (de/ch):**
Simply Scripting, Milling, Printing? On the Resistance of
Precision in Digital Architecture and Fabrication

The panel discussion rethinks the role of material and medium in the present, challenged by artistic practices based on new materials. The aim of the panel is to intensify the discourse on the concept of 'media', to register how media have changed, how they have influenced our lives, and how artists can influence media developments in the future. In this context the panel will try to stimulate a debate on the 'material turn' in electronic arts.

Monika Wagner (de)University of Hamburg
Professor of Art History

Materiality, Mediality and Concepts of Touch

The relationship between materiality and mediality, between hand and eye, touch and visibility is a topic which had been controversially discussed long before the advent of the digital era, even before the “scopic regime” (M. Jay). This relationship concerned both, the production as well as the reception of art works. Until today the notions of medium and material seem to be in latent conflict, though the materiality of the medium and the mediality of the material may be regarded as two different functions of the same work.

A look back into history may help to understand the power and fascination of the long time favoured overthrow of materiality in the fine arts which was accompanied by the dominance (or tyranny, as some put it) of the optical. In Gotthold Ephraim Lessing's tragedy “Emilia Galotti”, which appeared in 1772, the painter Conti reflects on the characteristics of artistic production. He considers himself a great artist, though his hand does not always satisfy his artistic requirements. In elaborating on this shortcoming, the painter asks a meanwhile famous question: “would Raphael not have been the greatest pictorial genius if he had unfortunately been born without hands?” The tradition of Lessing's painter, who favours the artistic idea in spite of its materialisations, reaches back to antiquity. By radicalizing the idealistic tradition in the narrative of the enlightenment the underlying concept of *disegno* is being challenged: combining the brain directly with the carrier material where the picture is to appear meant the denial of any communication between the artist and somebody else and was therefore absurd. Lessing's painter, who declares hands dispensable, argues – remarkably materialistically – that the distance between the brain and the hand seems too far, so that part of the idea gets lost in the transmission.

Influenced by the possibilities of digital picture production the fascination of direct interaction between brain and computer has been reflected in many artistic experiments in recent decades, experiments in which utopian promises and futuristic techniques are combined. They still seem to feed on

this long lasting concept of *disegno*. This concept, in which materialisation becomes secondary, has contributed to the devaluation of materials while simultaneously minimizing the activity of the hand.

Lessings radical image of “Raphael without hands” dates from a time, when an opposing concept of the relationship between artistic ideas and materials, between the mind and the hand of the artist, began to emerge. In a more empirical understanding hands gain a specific knowledge by working with and experiencing physical materials. These “learned hands” of the artist were conceived to interact with his brain, to feed in their specific manual experiences. The obviously less successful concept which has to some extent been revalued parallel to the triumph of the digital world has likewise inspired many artistic explorations and confrontations of haptical and digital “material”.

In addition, when considering the reception of artworks we find similar long lasting paradigms. Since pictures were not only conceived to delight the eye, but also to touch the beholder, the twofold sensual perception has been a central issue. Though emotional touch and physical tangency were of course located on different levels, they were connected. At least since mid 18th century vision has been trained to integrate tactility. Johann Gottfried Herder pursued the sensual integration, so that the “eye becomes the hand, the visual ray the finger”. The extent to which the sublimation of the hand of the beholder, which became an issue since art works were exhibited in public museums, is sublated or transformed in the interactive works of the electronic arts should be examined in this context. Especially in those works, where the beholder is transformed into a user, that is especially in the field of networking, the specific type of interaction, of physical involvement and participation should be critically analyzed.

Physical touch, which was an argument within the earlier paragone in favour of three dimensional works, is irrelevant for works displayed on a screen, since screens do not give tactile information. Nevertheless emotional affection or immersion are psycho-physical states and therefore touch is not only a question of contact by hands. The overall surrounding of the beholder by pictures in black boxes of video projection f.i. or James Turrells light spaces are not only a visual, but a corporal experience. In this understanding of touch, which was already experienced in early cinema, pictures or colors totally engulf the beholder like music. Avoiding any distraction allows corporal touch by pictorial flows.

The revaluation of touch, which at present can be widely observed, occurs on both different levels in the electronic arts. The interest in touch follows on the one hand the interest in objects and in physical materiality, which seems to be a symptom of loss of contingency. On the other hand the expanding possibilities of the electronic arts are shaping new forms of experiences, in which touch is the effect of visually imposed emotion.

Marta de Menezes (pt)
Artist

Biology as a New Art Medium and Its Possible Implications in Art Research

What is art research and what is its methodology?

Is there such a thing as art research and if so how can we define it, describe it or even draft some guidelines to evaluate it?

Part of this complicated process seems to be the incorporation of the art schools (which in many cases have always been separate from universities) in the official higher education system at an academic level.

Well, it is exactly the art practice, and the research within, that concerns me the most as an artist interested in researching new ways of representation in the visual arts.

It appears to me that when most people consider art practice, they never think of it as the result of research. Most frequently this vision is correct, perhaps the most visible side of art does not require significant research. However, many examples can be found where art is a more or less a direct result of research in new methodologies, new media, and new practices, which in many cases do not just emerge from the work and research of only one artist but rather from many artists, working around the world on similar concepts. It should be noted, however, that not only this art research is mainly invisible to most people, but it is also frequently conducted without the support of an infrastructure (namely academic) by several individuals who do their own thing and have their variable impact on the field of art. The need for a review of art research, I believe, has many origins.

First, if we need to assimilate art practice and research into European universities it is necessary to have a complete understanding of these issues.

Second, the field of art has always been very elusive about things like boundaries and rationalization, and that is one of the most important things about its nature that we must preserve, while still being assimilated into the

enormous machines that are universities where everything is levelled and more often than not by the lower basis of excellence (unfortunately).

So we arrive again at the point from the beginning of the text. What is art research?

What is the difference between art research and art practice?

In order to achieve the clarification between art theory and art research, it is necessary to revisit the question in the beginning of this text: What is art research?

I will start by explaining my personal prejudices concerning art research, and the reason for considering myself an art practitioner as well as an art researcher.

I am an artist. As such, I practice art and create artworks that are shown in galleries, museums and festivals around the world. I sell some artworks, some others are difficult to sell. This is my practice. I have created works that use live material, and live organisms, modulated to explore a certain concept that is important to me and my practice. Concepts like identity, fairness, manipulation, authorization, human and animal condition, the natural – artificial dichotomy, etc.

The fact that I have used live material and materials and methods borrowed from science to perform and create my work is also part of my practice, but most importantly, I place it into the realm of art research. The reason for considering the process of the development of my biological artworks as art research is due to the fact that the very nature of the process implies the use of live material for artistic expression. This is something that is being developed for the first time, making it more relevant for the field of art practice in general than just for my own practice. The more I explore the field of science, and biology in particular, to create my artworks, the more I expand the possibilities for other artists to develop their work, and this I consider as an objective of art research. The more experiments I make with the variety of materials I have at my disposal, and the more projects I pursue with different scientific partners, the more experience I will gather, as a researcher, to share with other artists. My challenge, a personal one, has been to write about it as a researcher only and not also as a practitioner, or as a practitioner only and not as a researcher as well. If it is at all possible to do the writing of the two actions separately, or if it is meaningful to try to do so.

Art practice is something that does not need to be incorporated into the universities and should not be incorporated into the academic system, but it should feed from it and most importantly be informed by it. Even if it does involve some degree of research, as it evidently frequently does.

So, to try and make clearer, or then again, maybe not: art research should base its practice on the example of the practiced scientific research, with papers being written about the developments, hypothesis being made and disproved, experiments being conducted, and evaluations on outcomes being compulsory.

Practice however, is subject to market rules, works of art being made, shown and purchased, depending on the field of practice.

Ideally (and we must always aim high) we will one day be able to see the very nature of art without trying too hard to define it. And we will do this, it is my conviction, through research in art. The definition of art has always been a problem, but even more so when you try to explain to the general public the compulsory need we have to make art. I find always that the non-artistically sensitized people will always try to define what is art when discussing art issues with an artist. And though we (artists) have all been there and done that, we know that it has not been a very useful exercise, in the short or long run, because we can always find the exception to the rule that we will still have to include in the art bag we have just defined. I have a suspicion that much more interesting than trying to define art, would be to understand a bit better the nature of art, in all of its irreverence and rebellious, smart and conscious ways of thinking about all the issues that concern us so intimately as humans and animals in this world, without the absolute need to understand how it works.

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Technology, Materiality, and Aesthetics

Introduction

In technology design, aesthetics happen on the surfaces of objects; an elegant computer is a computer with an elegant form and an elegant skin, typically a form and a skin that is rectangular, smooth, and hard. There are good reasons why this is the case – the components that make up interactive devices (circuit boards, processors, sensors, and screens) are hard and rectangular themselves, and, perhaps more importantly, they're fragile. They can't be bent, they can't get wet, and they're sensitive to light, dust, and static electricity. Given these constraints, is it possible (or desirable) for aesthetic design to move away from the surface of interactive devices? What might this mean and what would it entail?

This paper briefly examines three opportunities for rethinking the aesthetic and material design of interactive objects. We explore how three simple but critical components of such devices – connectors, sensors, and actuators – can be realized in unusual ways in a wide range of materials, thus expanding the aesthetic and expressive palette of technology design.

Material Connectors

Wires are the simplest of electronic building blocks. By enabling electricity to flow from one place to another, they connect component pieces into a whole. We're most familiar with these connectors in the form of standard insulated wires and traces on circuit boards. However, an amazing range of materials can be used to connect things in their place and we can open up strikingly new design realms by simply employing unorthodox materials as wire. Figure 1 shows two examples that illustrate some of this potential. In the figure on the left wire is replaced by thread – components are sewn together with conductive thread – and on the figure on the right wire is replaced by paint – pieces are connected through areas of conductive paint.



Fig. 1: Left: Becky Stern's LilyPad Embroidery. Right: A painted circuit board by Leah Buechley.

As the images suggest, design and aesthetic possibilities can change dramatically with simple change in our assumptions about the material composition of wires.

Material Sensors

Wire is a surprisingly powerful design element, but one that has obvious limitations. The ability to construct sensors from a variety of materials – including thread, paint, paper, plastic, and wood – further broadens and deepens the interaction design palette. To illustrate the potential in the area of input devices, Figure 2 shows a collection of sensors that were constructed entirely from textile materials like yarn, thread, snaps and beads.

The sensors shown in the figures can detect pressure, bend, stretch, tilt, and stroke. They are soft, colorful, washable, and in many cases stretchy, embodying affordances that are unique to the textile medium. This collection encourages designers to imagine artifacts and applications well beyond traditional hard boxes.



Fig. 2: Hannah Perner-Wilson's textile sensors.

Material Actuators

Though the material landscape of actuators is not yet as varied as that of sensors or connectors, advancements in technologies like printable OLEDs, e-ink, and nitinol are enabling us to construct actuators from a steadily growing collection of "stuff". Figure 3 shows an example that illustrates how such materials can enrich design. Here a programmable, nitinol-driven venus flytrap constructed out of paper opens and closes on command. The sound-



Fig. 3: Jie Qi's interactive pop-up book.

less, breath-like quality of the paper plant's movement would have been exceedingly difficult to achieve without nitinol.

The point of this discussion and these brief examples is to show that a beautiful and diverse assortment of materials – materials that are readily available today – can be employed in surprisingly simple contexts to significantly expand the functional and aesthetic potential of technology. We do not need to wait for programmable matter or any other high-tech advancements to expand the material language of technology. There is plenty to be done right now.

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Simply Scripting, Milling, Printing?

**On the Resistance of Materials and the Question
of Precision in Digital Architecture and Fabrication**

Looking back to classical architectural theories the concept of materiality and construction was regarded as the sole and consistent topic in architecture. In the 19th century architect and theorist Gottfried Semper has complained that they could cut granite, such as cheese. He criticized that the technical progress would overcome the resistance of the material and that architecture runs the risk to lose control over the building process. What would Semper have said to current developments in digital architecture and fabrication?

We talk about digital architecture, digital design and digital science. Whatsoever that implies: We think we know how a computer operates. We think we know what hardware and software is. We think we know how an algorithm performs and what code theory means. We think we know that robotics open up new opportunities for constructing complex geometries. And we think we know how to print not only photovoltaic cells and microchips, but also plastics and concrete. To say it short and sweet: Our general knowledge about the concept of materiality and precision in digital architecture and fabrication seems appreciable.

Indeed, the current scope for dialogue between architecture and the computer has grown substantially larger. In previous areas of digital design, the computer was regarded as a tool for visualizing already finished concepts. However, the ability of information technology to develop computer programs for each specific design and production task has expanded the potential of the architectural design process. It is technically conceivable to use the computer in architecture no longer just as ready-made collection of digital tools for conceiving and producing complex forms, but to use the computer itself as a tool for developing new tools, to compile new collections of tools and to

expand them at will. The computer has become an open system of architectural design and fabrication.

In the course of this development the scope for the so-called dependence of construction and materiality has grown as well. Combining digital design and fabrication tools gives birth to a digital craft that allows architects to intervene directly in the production process and also opens up an array of new design options.

If traditional craft involves an implicit knowledge of using materials, “digital craft” requires also a precise description of every single step of the fabrication process. And that’s the problem: The resistance of the material. Milling machines process wood with unimagined accuracy. Robotics becomes a powerful tool for producing brick walls with complex geometries. But almost all of these machines used for digital fabrication modify the material they process.

What does this mean for the concept of materiality in architecture? How should we discuss not only about the relationship between man and machine, but also between materials and machine? And what does this say about the role of architectural production in the context of art, science and technology?

P5

Theory and History of Media Art I

■ Oliver Grau (at):
Media Art in Exploration of Image History

■ Lioudmila Voropal (de):
Media Art and Its Theories from "New Avant-garde" to
"Science-Brut" Discourse Analysis Approach

■ Christo Doherty (za):
Rethinking Cybernetics and Electronic/New Media Art History

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Media Art in Exploration of Image History

The Media Art landscape of recent years is being increasingly seized by a phenomenon which has yet to receive any significant research, classification or analysis: the use of historic media configurations as an integrated part of contemporary media art installations. Internationally renowned artists like William Kentridge, Olafur Eliasson, Zoe Beloff, Jeffrey Shaw, Maurice Benayoun, Rafael Lozano-Hemmer, create optical experiments, panoramas, phantasmagoria, perspective theaters, camera obscura, anamorphoses, magic lanterns, etc.

Never before has the world of images changed so fast in such a short span of time. Historical development of images between innovation, reflection and iconoclasm achieve new global linkage and complexity in the 21st century. Digital images became ubiquitous and key tools within the global reorganization of work, but these transformations hit society to a large extent unprepared.

In our most recent present, which has generated conferences and exhibitions with titles like *Image Wars* (New York 2009) or *Iconoclash* (Latour/Weibel 2002), artists venture in a reflective manner towards new measurements of the complex status of seeing – this is the core of the investigation and includes perception, reception and cognition as well as the process of creating images. In the “mine of media history” and the history of image techniques new thinking spaces (Denkraum) are created through new interfaces, displays, hard- and software configurations, often engaging viewers in a form of playful, creative combination.

By definition, Media Art is a relative term that has experienced transformation over time and currently counts digital media art as its newest representative. Film and even television are considered today already as “old” media. These image media still rarely receive public reflection, owing to their dominant cultural position, which play in their creation of collective “reality.” But slowly their predominance fades away and the prehistory of the visual mainstream culture of the 20th century arrives at the surface, trans-

ported not in the least by artists who try to approach the unique quality and emotional-sensuous experience of media.

Based on impulses from the history of perception, media artists today develop emancipatory strategies. What is the significance to the aforementioned artists, on the one hand through quotation, reference and analytic comments, and on the other hand by means of aesthetic distancing, in regard to the media revolution of the last decade(s)? More deeply, it should be asked for the significance found in these works in the form of self-reflections and self-images of humanity: in which way does the perception of the viewer, who has been shifted to the role of user through "interaction" become driven, captured, "misled" or vice versa uplifted and "emancipated"? In which fundamental manner do the newly created image processes differ from their historical predecessors, enlarge them, or even reverse? In which way are they included into innovative experimental and critical contexts that ultimately contribute to the development of a thinking space for reflection of visual strategies?

The evolution of media art has a long history and now a new technological variety has appeared. However, this art cannot be fully understood without its history (Arnheim 2000, Grau 2003, Gunning 2003, Huhtamo 2004, Chun 2006, Grau 2007). Additionally "depth of field" analyses of images can play an important role in facilitating our political and aesthetic analysis of the present (Zielinski 2002). By focusing on recent art against the backdrop of historic developments, it is possible to better analyze what is really new in media art and understand our present – that is the epistemological thesis.

In the past, comparative research studies on the sub-histories of media art could be developed: artificial life (Grau 2001), telepresence (Grau 2000), the principle of immersion and the panorama (Grau 2003) and the phantasmagoria (Mannoni 2000, Grau 2006, Heard 2006) were analyzed; steps towards the analysis of this latest movement in media art, focusing on historic image machines with modern technology and philosophy were made.

Most of my analysis will be based on the method of comparison, which is based on the insight that images act diachronic (but not teleological) within a historical evolution – with detours and contradictions (Gould 1999) but never function without reference (Warburg, Kemp, Bredkamp). Image science is based on three pre-conditions: 1. definition of the object, 2. setup of an image archive and 3. familiarity with a large quantity of images. Analogies or fundamental innovations in contemporary phenomena can be discerned through historical comparison, allowing us to differentiate and to distance ourselves from the phenomenon. Image Science can be seen as an anthropologic narration *and* a political battleground where the clash of images is analyzed. Image Science, or Bildwissenschaft is an open field that engages equally with what lies between the images and with the new perspectives resulting from interplay with neuroscience, psychology, philosophy, emotions research, and other scientific disciplines (Grau 2005, Belting 2007, Grau 2007, Grau 2010). This research is also based on the concept of the international MediaArtHistories Conference Series (www.mediaarthistory.org).

Media Art and Its Theories from “New Avant-garde” to “Science-Brut”

Discourse Analysis Approach

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The discourse of New Media Art (NMA is used here as a general term encompassing other related designations like Electronic Art, Digital Art etc.) emerged in a cultural and intellectual context of the late 80ies, which essentially determined its theoretical framework. From the very beginning NMA has claimed its cultural ‘added value’ by positioning itself as a vanguard of “creative exploration of New Media”, which goes beyond the borders of mere artistic practice: it is a socially useful field of experimentation, in which “art, science and technology” can be successfully integrated.

One could distinguish two major intellectual traditions, which became a feeding ground for a theoretical conceptualisation of New Media and NMA in the 80ies. On the one hand, there was a distinguished neo-positivistic trend, represented by artists and institutions (e.g. the MIT Media Lab, *Leonardo* circle) primary concerned with a practical implementation of New Media in art practice. An “exploration” of new technologies was an implicit ultimate purpose of this trend.

On the other hand, we find an attitude rooted in an intellectual tradition and discourse of contemporary art, which was mainly formed by theoretical trends and tendencies in the academic humanities. Concerning the 80ies, these trends can be retrospectively clearly differentiated: French poststructuralism with its worldwide reception partly overlapped with the postmarxism and a Frankfurt school devotion and resulted in massive “postmodernism” debates, spreading out into public discourse.

The NMA discourse of the 80ies and 90ies was perfectly inbuilt into a conceptual interpretative matrix of the ‘High Postmodern epoch’. A simplified poststructuralist conceptual apparatus and its interpretative techniques were widely applied for a description of “New Media” and associated art practices: Computer networks have “rhizomatic structure”; “hypertext” is an ultimate alternative to the “classical linear narrative”; “interactivity” creates an “open artwork” and dissolves an opposition of author/recipient and suspends thereby “authoritarian aesthetical dispositives” of “traditional art forms”; and so forth an so on.

In the process of the institutionalisation of NMA a glorified initial “critical” and “truly democratic” potential of NMA, especially of “Net Art” and “Tactical Media” practices, was step by step turned into ritual slogan. The globalized system of contemporary art, fully conformed to the universal neoliberal agenda, has quickly instrumentalized an “anti-capitalist” protest rhetoric and integrated it into its “hegemonial” discourse and official program. Socio-critical NMA activism has obtained its harmless place in the reservations of international art festivals, biennales and other institutional venues.

This evident instrumentalisation of the concepts of “critical art practice” and “critical” per se was helplessly registered by politically conscious artists and art theoreticians. “Gouvernementality” concept, developed by late Foucault, was took on board in order to explain, how in the art field a critique of a system becomes an essential part of the system itself.

However the discourse of NMA, produced and distributed within an institutional NMA context, till now continues to actively exploit the rhetoric of the (pseudo-) critical. Aesthetically unpretentious and conceptually repetitive “trying-outs” of the up-to-date technical facilities, which represent the mainstream of the current NMA production, are constantly interpreted (partly naively, partly hypocritically) by numerous NMA discourse producers/propagators as “critical reflections”, “artistic explorations”, “deconstructions” and “new definitions” of new media and technologies.

These conceptual ‘copy & paste’ common places still permanently migrate from project descriptions to critical reviews, from application proposals to curatorial statements. They slowly become semantically entirely emasculated signifiers, which in fact have nothing to do with the objects they are supposed to designate. The only thing they still successfully represent is the state of the system, which functioning became an end in itself and in which the question of conceptual and aesthetical ‘quality’ of artistic production (whatever it might mean) became absolutely irrelevant because of purely structural reasons.

The last ten years of a NMA development have proved that the neo-positivist trend has definitely won a competition with the contemporary art orientated NMA wing, whose representatives today very cautiously and reluctantly define themselves as media artists. The main mantra of NMA – the holy Trinity of Art, Science & Technology – led to reduction of the notion of art in this triad to a pre-modern, in antiquity rooted conception of art as producing *téchne*, where art is only a set of practical skills and ‘know-how’ and artist is a craftsman, who, with the help of these skills, produces a particular kind of objects.

As a result, today’s NMA has ended as an apprentice of Technology and media artist as a not enough skilful craftsman. His fate is to be a kind of a hobby-scientist, who has to learn from the real professionals in order to improve his skills. While many NMA-pioneers were professional scientists and hobby-artists *stricto sensu*, who practiced a sort of ‘*Technological Art-Brut*’, today’s media-, bio-, etc. artists became in fact hobby-scientists, who diligently practice something one might define as ‘*Science-Brut*’.

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Rethinking Cybernetics and Electronic/New Media Art History

Oliver Grau has recently argued that “it is important that we continue to take media art into the mainstream of art history”(8). This paper will argue that media art must also be viewed through the discipline of science history in order to “consider other models for relationships to technology” (Murray 39). This is particularly important in the case of the cybernetic art of the 1960s. Science historians have insisted that cybernetics is “essential to the history of our present” (Johnson 25); but grasping the massive impact of cybernetics on scientific thinking in its heyday requires an imaginative effort because cybernetics has all but disappeared from the contemporary scientific discourse. Cybernetics was the theory of the control technologies which unleashed the Information Revolution and was a fundamental challenge to the methodology and disciplinary hierarchies of contemporary science. Emerging from wartime research into artillery control; signal transmission; and brain physiology, cybernetics asserted an “essential unity of the set of problems centering about communication, control, and statistical mechanics, whether in the machine or living tissue” (Wiener 1961, 11). The unity of these problems was explored in a series of interdisciplinary Macy conferences held in New York between 1946 and 1953. The conferences unleashed a new organization of the physical, biological and social sciences based on the shared universal language of cybernetics (Bowker 117) and a methodology that returned teleology to science. Cybernetics has been accused of having established “a field of meanings grounded explicitly in the experiences of war” (Galison 263); but the kind of interdisciplinary co-operation exemplified in the conferences was itself a product of the wartime research

environment. A distinguishing feature of the Macy conferences was the commitment of the participants to apply cybernetic concepts to the challenges of post-war society in non-military fields.

Artists were conspicuously absent from the Macy conferences. This absence was particularly striking because cybernetics seemed to have much to offer artists with an interest in technology and the social. Most importantly, by reintroducing teleology into the analytic chain, cybernetics broke with traditional science. This is exemplified by the status ascribed to purposeful models in cybernetic thinking. According to science philosopher, Andrew Pickering, these models demonstrate that “cybernetics is an ontological project, aimed [...] at displaying [...] and exploring the liveliness of the world.” (431)

The notion of an ontological project is, I would suggest, much closer to artistic practice than the traditional science model of knowledge production. The British artist and arts educator, Roy Ascott, was one who recognized this (Shanken 26). In 1964 he stated that cybernetics “is concerned with what things do and how they do them, and with the process within which they behave. It takes a dynamic view of life, not unlike the artist.” (Ascott 101) He also recognized that the traditional sciences, with their specialized fields of inquiry, only allowed casual consultation by the artist; whereas cybernetics was “integrative” and is the “co-ordinator of science, as art is the co-ordinator of experience.” (101) Two years later, and writing for a readership familiar with cybernetics, he attempted to situate “the cybernetic vision” within a history of western art. Ascott identified a quality in contemporary art that he called the “behavioral tendency”, in essence a concern with open-ended process and event, which he believed had the potential to assist a broader social transformation from “the old deterministic culture to a future shaped by a cybernetic vision.” (111) A conspicuous aspect of Ascott’s engagement with cybernetics is his overwhelmingly optimistic view of the cybernated society of the future. By contrast, cyberneticists such as Wiener were deeply concerned about the future consequences of cybernetics for humanity, warning that “the new industrial revolution is a two-edged sword” (1954, 162) with the potential to unleash devastating unemployment and destructive wars. As David Porush has shown, this concern was shared by many of the creative writers of the time, who he groups under the label of cybernetic fiction. Writers such as William Burroughs and Thomas Pynchon recognized the potential of cybernetic control to stifle human possibilities while responding to the technological insights in new forms of literary production. In contrast to Ascott’s optimism and cybernetic fiction’s pessimism, the Korean artist Nam June Paik presents a different approach to the new science. His 1966 manifesto, although not as developed as Ascott’s engagement, outlines a role for cybernated art within a cybernated society. Paik recognizes the need for an artistic practice directly informed by cybernetics; but instead of presenting this art as the handmaiden of social change, Paik sees it as performing a homeopathic function: using cybernetic techniques the artist will treat the “specific frustrations caused by cybernated life” with “cyber-

nated shock and catharsis" (229). In their writings from the 1960s both Paik and Ascott present different models of the relationship between engaged art practice and the new science of cybernetics. These relationships cannot be understood without reference to current work in the history of science.

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P6

Building Musical Instruments

■ Elisabeth Schimana (at):
Forgotten Future #1 Magical Sound Machines

■ Halldór Úlfarsson (is):
Halldorophone

Elisabeth Schimana talks about her work with the Max Brand synthesizer, developed by the ingenious inventor Bob Moog for the visionary composer in the late 1950s and other sound producing machines from the early days of electro-acoustic music. Halldór Úlfarsson presents his acclaimed Halldorophone, an electro-acoustic string instrument in permanent development.

**Elisabeth
Schimana** (at)

IMA Institute of Media Archaeology

Forgotten Future #1 Magical Sound Machines

One day the Emperor received a large package
labeled The Nightingale.
But it was not a book. In the box was a work of art,
an artificial nightingale most like the real one.
Thirty-three times it sang the selfsame song without tiring.
Hans C. Andersen, The Nightingale, 1849

Recorders – Transmitters – Generators

Long before the advent of electrification, people began developing automatic mechanical recording devices for their musical pleasure, and the many constructions that have been built since then continue to enchant us: music boxes, barrel organs, cylinders, records, optical tapes, paper tapes, magnetic tapes and disks, and with them the accessory perforating, punching, cutting, blackening, drawing apparatuses as well as those for reading and playing back the stored data.



Fig. 1: Electrical sound transmission

In 1796 the Bratislava-born pianist and composer Josef Chudy staged *The Telegraph or the Long-Distance Type Writer*, an opera in one act, at a theater in Pest, with the intention of both entertaining his audience and introducing it to the optical and acoustic telegraph he had invented in 1787. This laid the foundation for electrical sound transmission. Nearly a century later in 1883, one of the main attractions at the International Electrical Exhibition in Vienna was a concert via telephone line in which the singer was in Korneuburg and the pianist in Baden. This was followed from 1885 onward by a flurry of

activity across the continents: Alexander S. Popov in Russia, Nikola Tesla and Reginald A. Fessenden in the USA and Guglielmo Marconi in England forged the way for radio signal transmission and all ideas and experiments connected with the radio.

1900 was also about the time when “by serendipity” physicists came up with the first electroacoustic sound generators. An incredible plethora of experiments produced a wide array of electric instruments, and in 1932, for example, an orchestra of the future with electric cello, traultonium, electric violin and theremin performed at the Berlin Radio Exhibition.



Fig. 2: Exhibition
“Magical Soundmachines”

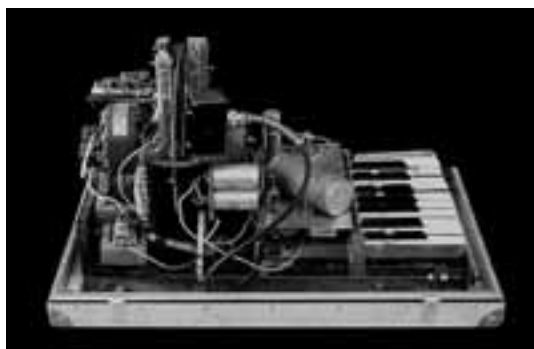


Fig. 3: Rhythmicon

In 1840 Ada Lovelace wrote the first computer program and foresaw a machine that would be capable of composing elaborate music of every degree of complexity imaginable. Binary thinking and the rasterization of the analogue world led to digitalization, the realm in which the universal machine records and transmits and generates.

For the selection of the sound machines in the exhibition “Magical Soundmachines” [1] it was especially important to us that the objects were playable, because in this neanalogue age we want to learn what these apparatuses have to tell us, what secrets they hold – we are fascinated by their sonorous materiality.

Composers, musicians, theoreticians and visitors revived selected sound machines like the Edison Home Phonograph, the Speaking Machine, the Rhythmicon, the Max Brand Synthesizer or the Akaphon on display in the exhibition and reinvented them.

The IMA Institute of Media Archaeology focuses its attention on a “forgotten future” waiting to be rediscovered, with the aim of re-examining and continuing to explore these forgotten visions.

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- [1] Exhibition organised and curated by IMA Institute of Media Archaeology at Kulturfabrik Hainburg in co-operation with the Vienna Museum of Technology September 2008 to April 2009

Briefly on Halldorophones

Text by Rune Søchting, Director of the
Nordic Sound Art M.A. Programme

Halldór Úlfarsson (is)

Artist

The Halldorophone project creates an intersection or hybrid of instrument-objects. The sound of the strings is picked up, amplified and retransmitted back into the body of the instrument thereby causing the strings to vibrate further. The result is a virtually endlessly sustained sound. Visually, the unique instrument objects are appealing, not least for the strangeness of the brutal integration of the speaker cone into the instrument itself, making them part instrument, part speaker.

At first glance the Halldorophone instruments seem to belong to the contemporary tradition of the use of feedback in music. Electronically amplified sound re-amplifying itself over and over, resulting in an ear-wrecking scream has traditionally been considered an unwanted side effect of the controlled amplification of an acoustic signal in concert, feedback has however found its place in contemporary music and constitutes its own field of artistic exploration. By nature feedback is unpredictable and unstable, it appears as a violent sonic force and once released can, at best, only be partly controlled. A prominent example is Jimi Hendrix shoving his electric guitar into the Marshall cabinets, creating a trademark impression of the violent, uncontrollable nature of the electrical guitar through feedback. Toshimaru Nakamura's work with the 'No-input Mixing Board', where the signal output of the mixer is fed directly back into the mixer, uses the feedbacking system to create an astonishing variety of sound-qualities. Composer Alvin Lucier has examined feedback in pieces such as 'I am Sitting in a Room' and the installation 'Empty Vessels', where feedback which includes the acoustics of a room creates a vibrant space that is both sonic and architectural. The Halldorophone#5 as a modification of an existing string instrument (the cello), in a way, follows the tradition of experimentation with the phenomenon of feedback. However, conceptually a much longer tradition of musical instruments is addressed with the project. The Halldorophone directly targets the process of what is electro-acoustic. It works with acoustics within the tradition of (pre-electric) hollow-bodied string-instruments and then integrates the process of pickup



and electrical augmentation of the acoustic resonance into the resonating body itself thereby creating the possibility of an endless reflection of the acoustic signal.

Now the question of the use of the instrument arises. A traditional acoustic instrument is played by the trained movements of the instrumentalist. By virtue of an intimate understanding of the resonant behavior of the instrument, the skilled instrumentalist is able to extract a wide range of sounds from the instrument body. The electronic amplification of the sound is traditionally only a secondary process that serves to amplify the existing qualities. With the Halldorophone, however, the process of amplification is paradoxically integrated into the sound-making itself. By playing the instrument the unstable feedback-process is triggered. The acoustic sound is played back into the instrument itself and an endless electro-acoustic loop is created. The instrument creates a feedback-reflection of its own sound – a reflection that can not be played in the strictest sense but only partly controlled.

<http://www.halldorulfarsson.info/halldorophone5>

P7

Theory and History of Media Art II

- Anita McKeown (gb):
Diggers and Dreamers of the 21st Century: Creative Commons, Open Source and Digital Folklore
- Joelle Dietrick (us):
■ Flexibility After Destined Death
- Edward Shanken (us/nl):
Contemporary Art and New Media. Outline for Developing a Hybrid Discourse

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Diggers and Dreamers of the 20th and 21st Century: Creative Commons, Open Source and Digital Folklore

The Digital Britain Report (2009) and European regulations raise concerns about ownership of the net and the impact on its potential as a 'common land'. Are these new regulations 21st century enclosure acts? If accessible territory is carved up and owned by the few, why should we care?

In 1649 Gerrard Winstanley's Diggers utilising common land aimed to promote communal and collective production and laid the foundations for the concepts embedded within FLOSS/Creative Commons practices.

Winstanley's vision of an egalitarian society came to him in a dream yet despite this mystical associations his vision should not be considered less valid. I suspect Tim Berner's Lee and other early Internet and open source pioneers would have much in common with this 17th Century visionary's ideals.

Looking more closely at the concept of common land or 'the commons', those spaces or resources 'held in common' (Bollier 2003), it is apparent that in practice 'the commons' are actually shared or owned by a distinct, easily identifiable group of individuals. Whether grazing animals, enacting traditions or remixing audio or sharing code, users of common land will have shared interests and values.

Although there is often a proprietary or cost aspect somewhere even if not overtly so, it is the understanding of the commons as accessible that is necessary for an expressive culture. In fact the potential for expression thrives within an environment where it is understood, that unless forbidden, much is possible.

When I use the term digital folklore I am not referring to Theresa Heyd's definition of Digital Folklore i.e. 'relating to computer mediated communica-

tion e.g. hoax emails or urban legends traceable back to office lore' (Giltrow & Stein 2009, p239).

Nor, although related, is it what the editors of the Digital Folklore Reader, define as 'the customs, traditions and elements of visual, textual and audio culture that emerged from users' engagement with personal computer applications during the last decade of the 20th and the first decade of the 21st century (Lialina and Espenschied 2009, p9).

Folklore originally referred to the 'otherness' of 'Folk' – collections and practices of 'rural peasants' (Trubshaw 2003, p4) not regarded as gentrified culture and what 'others' do. These practices of 'others', while being populist, are accessible to the cultural elite who also participates.

Within folkloric practices there is an understanding that activities are accessible, experimental and collectively owned. This collective ownership enables the activities to be constantly re-invented and re-invigorated. Although local traditions may seem to have a collective ownership that can appear exclusive, in terms of copyright anyone can re-mix that tradition. In fact this constant re-invigoration and re-invention within the context of their time could be the reason they survive, through their ongoing relevance. These self-organised and emergent activities have an important function within society through the creation of spaces for expressive culture and as Sahlins states 'do not passively reflect a culture they shape it too' (Sahlins 1985, pxi).

If a culture shifts to an understanding of only sanctioned activities being permitted, or cost becomes a prohibiting factor this contributes to a two-tiered system. Although this does not in itself stifle imagination it instantly reduces the available space within which the imagination and its expression can be manifested. This then begins to shape the culture.

Currently Internet access supports open source activity providing a platform for a complex multi-tiered system. This emergent accessible culture, common in folkloric practices is celebrated and protected within Creative Commons/CopyLeft licenses. The sharing and production of Open Source software sees user and developer relationships mirroring the practices of populist folkloric practices.

Guattari acknowledges the value of accessible spaces, in particular the concept of the rift or rupture e.g. accessible space. Although he applies this idea to art practices, I would argue that it is the space created that is important whether this is as art, folkloric practice or the culture of Open Source and Creative Commons.

Such accessible spaces create 'new affirmation[s] of the world' (O'Sullivan 2006, p2) and the activities in these spaces are what Guattari calls 'fundamental encounters' (O'Sullivan 2006, p1). The web 'encourages people to adopt new habits and roles, as collaborators, distributors, editors and creators of content' (DBR 2009, p7). These activities enable us to create new affirmations and manifestations of our worlds, facilitated and protected by FLOSS and Creative Commons-licences. This emergent behaviour of de- and re-territorialisation can be seen as a continual process of becoming crucially important for an expressive culture.

In a world of faux public space, health and safety regulations and security it is necessary to preserve accessible spaces for expressive culture. Internet regulation and legislation could inhibit these practices just as the regulation of folk practices did during the Victorian era.

People want to do what we have always done – connect and interact. This paper acknowledges the continuity between the practices enacted in both digital and material cultures.

The idea of common liberty is still held as a deep-rooted belief and I would argue for the moment at least, is alive both on and offline.

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Flexibility after Destined Death

This paper developed out of my attraction to painting-digital hybrids and my frustration with antiquated structures inhospitable to media flexibility. I've organized the paper in that order – first, as a survey of best practices, followed by thoughts on structures that allow innovative experimentation with traditional and digital media to thrive.

Now that digital tools are ubiquitous, contemporary artists use them at all stages of development. Ideas might be researched on the internet, sketched with pencil, scanned into the computer, manipulated, transferred to canvas, painted, recaptured with a camera, manipulated again, projected again, revised and perhaps resolved. This is nothing new. Cave men incorporated new tools into the practice of painting. What's changed, gradually over time and now at a fevered pitch, is emerging technologies' effect on the speed of progress, both within a painter's practice and the medium's history. What's also changed is the influence of digital media on painting decisions.

Although some painters prefer distance between the computer and their studio, others use computers to impact paintings in subtle to profound ways. As these digitally-influenced paintings make their way into the market and influence painting's history, identifiable trends emerge. At a 2007 symposium called *Painting as a New Medium*, Barry Schwabsky described a mass of paintings being produced under a "new-image-regime" in which "images are not what need to be cleared away in order to see other things more clearly, but on the contrary, they are precisely what need to be seen more clearly." [1]. The symposium roundtable also emphasized the ease with which contemporary painters drift between figuration and abstraction. Digital tools help cultivate this tendency. Artists like Chris Finley, for example, find images online, manipulate them on the computer, and paint them on canvas. As the images move in and out of virtual space, meaning and forms distill and often dissolve.

Sometimes the manipulation stops one level down. Here we witness the proliferation of flat painting in artists like Sarah Morris, Kevin Appel, Ryan McGuinness, and Brian Alfred. This documentary shows part of Brian's process. Since his fellowship at Eyebeam, Brian makes animations and paintings. Just as many early video artists started as painters, many animators develop out of drawing and painting. Contrasted with the slick products of Hollywood, painters-turned-animators often incorporate traditional techniques and offer painterly approach to form and color. In 2007 at the San Diego Museum of Art, Betti-Sue Hertz curated a thorough survey of what some artists describe as motion paintings. Offering diverse approaches to the crossover, the exhibitions included artists who take "advantage of

animation concepts and technologies” while being “persistent in their use of pictorial codes associated with historically grounded painting and drawing traditions” [2]. Highlights include Barnstormers, Jeremy Blake, Kota Ezawa, William Kentridge and Robin Rhode.

Other digitally-savvy painters complicate forms with code, either through existing software or written from scratch. Think here of Matthew Ritchie and Julie Mehretu. Their imagery connects to artists working with code, people like Casey Reas, Joshua Davis, James Patterson, and Evan Roth. These artists harness the power of code to create increasingly complex forms. Books like *Flash Math Creativity* and open-source software like Processing made code suddenly seem accessible to more people [3]. In his 2004 book *Hackers & Painters*, programmer Paul Graham made convincing connections between programmers and painters. Programmers produce lines of broken code, revisit and revise; painters sketch ideas, revisit and revise. Programmers love the immediacy of code; painters praise the same of paint. Programmers see sublime beauty in the power of code; painters also seek the sublime [4].

My own artwork revels in the space between traditional and digital media. Last year, I created an animation for dancer Nora Chipaumire in which I scanned in painting palettes normally discarded and moved the viewer through holes in the palettes to eventually bring them to Zimbabwe, the psychological reference for Nora’s choreography. This year, I developed *The Sherwin Series*, a group of prints, paintings and animations that remixes Sherwin Williams 2007 color forecasts with the architectural structures of 2010 foreclosed homes. My process involved research on Google maps, image manipulation in Flash, and output to final forms.

Just as figure-abstraction hybrids offer refreshing results, so painting-digital hybrids break new ground. When working between traditional and digital media, the liminal space of that practice can be uncomfortably ambiguous and disorienting. Sometimes these moments of discomfort open normal limits to thought, self-understanding, and behavior. This state often cultivates fresh insights manifested in memorable forms.

In a transitional age, when arts practices acclimate to flexible media categories that mimic the messiness of life, how can foundations and academic institutions offer programs that allow artists to specialize when they need to but also have flexibility when they are inspired? Only through debates among open-minded colleagues will we develop the supportive, semi-permeable structures that would foster another cultural renaissance.

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Contemporary Art and New Media: Outline for Developing a Hybrid Discourse

Since the mid-1990s, new media art (NMA) has become an important force for economic and cultural development internationally, establishing its own institutions, such as the ZKM, Ars Electronica Center, ICC, Eyebeam, and Laboral. Collaborative, transdisciplinary research at the intersections of art, science, and technology also has gained esteem and institutional support, as demonstrated by the Artists in Labs program (Switzerland) and the proliferation of interdisciplinary Ph.D. programs around the world. During the same period, mainstream contemporary art (MCA) experienced dramatic growth in its market and popularity, propelled by economic prosperity and the propagation of international museums, art fairs and exhibitions from the Tate Modern to Art Basel Miami to the Shanghai Biennial. This dynamic environment has nurtured tremendous creativity and invention by artists, curators, theorists and pedagogues operating in both domains. Yet rarely does the mainstream artworld converge with the new media artworld. As a result, their discourses have become increasingly divergent.

MCA practice and writing are remarkably rich with ideas about the relationship between art and society. Indeed, they are frequently engaged with issues that pertain to global connectivity and sociability in digital, networked culture. Given the proliferation of computation and the Internet, perhaps it was inevitable that central discourses in MCA would employ, if not appropriate, key terms of digital culture, such as “interactivity,” “participation,” “programming,” and “networks.” But the use of these terms in MCA literature typically lacks a deep understanding of the scientific and technological mechanisms of new media, the critical discourses that theorize their implications, and the interdisciplinary artistic practices that are co-extensive with

them. Similarly, mainstream discourses typically dismiss NMA on the basis of its technological form or immateriality, without fully appreciating its theoretical richness, or the conceptual parallels it shares with MCA.

New media not only offers expanded possibilities for art but offers valuable insights into the aesthetic applications and social implications of science and technology. At its best, it does so in a meta-critical way. In other words, it deploys technological media in a manner that self-reflexively demonstrates how new media is deeply imbricated in modes of knowledge production, perception, and interaction, and is thus inextricable from corresponding epistemological and ontological transformations. To its detriment, NMA and its discourses often display an impoverished understanding of art history and recent aesthetic and theoretical developments in mainstream contemporary art. Due to the nature of new media art practice and theory, as a matter of principle, NMA often refuses to adopt the formal languages and material supports of MCA. This is one of many reasons why it frequently fails to resonate in those contexts.

The perennial debate about the relationship between art and technology and mainstream art has occupied artists, curators, and theorists for many decades. Central to these debates have been questions of legitimacy and self-ghettoization, the dynamics of which are often in tension with each other. In seeking legitimacy, NMA has not only tried to place its practices within the theoretical and exhibition contexts of MCA but has developed its own theoretical language and institutional contexts. The former attempts have been so fruitless and the latter so successful, that an autonomous and isolated NMA artworld emerged. It has expanded rapidly and internationally since the mid-1990s, and has all the amenities found in MCA, except, of course, its legitimacy. However, the growing international stature of NMA and the seemingly irrepressible momentum it has gathered, make MCA's ongoing denial of it increasingly untenable.

This scenario raises many questions that establish a fertile ground for discussion and debate. What are the central points of convergence and divergence between MCA and NMA? Is it possible to construct a hybrid discourse that offers nuanced insights into each, while laying a foundation for greater mixing between them? How have new means of production and dissemination altered the role of the artist, curator, and museum? What insights into larger questions of emerging art and cultural forms might be gleaned by such a rapprochement?

With these questions in mind, my research identifies parallels between the discourses of MCA and NMA, focusing in particular on the theories of Nicolas Bourriaud and Roy Ascott, and the practices of artists including Rirkrit Tiravanija, Philippe Parreno, Raphael Lozano-Hemmer, and Graffiti Research Labs. I contend that these diverse actors share far more in common than is generally recognized and that a hybrid discourse that addresses the vital aspects of each can strengthen the discourses of contemporary art in general. Indeed, in a global digital culture in which millions of people around the world produce and share their own texts, images, sound recordings, and

videos, both new media and mainstream contemporary art must contend with the contested and shifting roles of the artist, curator, and critic. What do we have to offer that is special, that adds value and insight to this dynamic, collective, creative culture?

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P 10

Hybrid Public Spaces

- Jiun Jhy Her, Jim Hamlyn (gb):
Challenging Interactivity in Public Space.
- Lanfranco Aceti (tr):
Transcultural Electronic Negotiations: The Redefinition of
Public Art Across Cultures and Media
- Söke Dinkla (de):
The Aesthetics of Electronic Art in Public Spaces

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Challenging Interactivity in Public Space

Digital interactive art often demands a certain level of physical involvement in order to fully realise the artwork. Such an approach engages the audience and successfully provokes greater sensory awareness. However, the question of whether audiences are able to obtain Meaningful Experiences through predominantly physical interaction with art installations initiated this research.

In previous studies (Her and Hamlyn 2009, 2010), the authors selected Taipei and Kaohsiung MRT systems (Mass Rapid Transit) as the major research spaces and defined the research questions:

- 1) What experience does the audience obtain through interaction with the art installations?
- 2) How do audience experiences evolve?
- 3) How meaningful are these experiences?

In order to answer these questions the research has been carried out using multiple approaches which included a series of interviews, field studies and the creation of interactive installations. By examining the data from these different sources, the initial research framework, Engaging Characteristics emerged, which has been utilised for analysing the audiences' interactive experiences. Through these studies the definition and form of the four Engaging Characteristics has been reinforced, whilst the additional characteristic, "Incentive" was later identified.

Engaging Characteristics

Incentive: is an important characteristic as it does not require an active input from the audience to trigger an initial interaction that leads the journey of interactivity between the audience and the artwork. Without this crucial



Fig. 1: The interactive installations (selected research subjects) in Taipei and Kaohsiung MRTs

element subsequent interactivities may not proceed. Incentives can take on multiple forms. Common elements are most often acoustic or visual but can also include other sensory experiences.

Play: is a key component that breaks the ice as sometimes the audience feel it is intimidating to interact with interactive art (new technologies). Play, in the research context, often contains enjoyable, playful, effortless and unexpected elements that serve as bait to lure the audience to further engage with the art as well as to urge them to look closer and to participate more deeply.

Transfer: is a transformative capacity reserved for the audience. It allows the audience to control and/or manipulate the course of interactivity and to share a sense of creativity with the author, and very often with other participants. The feedback from this to-and-fro interaction often takes place in real-time and is clear enough to prompt the audience to contribute further inputs.

Accessibility: is the characteristic that builds upon familiarity, facilitating the audience to appreciate and to further engage with artworks. This may not necessitate the need for clear goals, or to have encouraged the audience to achieve or reveal specific meaning. Instead appropriate prompts may be beneficial and may lead the audience to obtain unique meaningful rewards and/or fulfilling outcomes.

Challenge: is a strategy that may prolong and intensify the attention-span of the audience. With dynamic and yet accessible challenges, the audience may be enticed to explore and engage, leading them to gain a more fulfilling experience. It is understandable that people feel intrigued and sometimes engaged by challenges and unexpected results when they are in charge and able to cope with challenges.

The Engaging Characteristics may often appear to overlap. Nevertheless, each has their own specific features. Despite the fact that these characteristics have been identified as viable strategies to facilitate the audience to obtain meaningful experience, the characteristics may not appear simultaneously in all installations. Indeed, they are often found in a disordered or incomplete sequence. In addition, the discrepancies of magnitude in each characteristic can also vary from one installation to another and therefore need to be unpacked on an individual basis.

The research aims to explore the concept of Meaningful Experience, through the way in which Engaging Characteristics may elicit Meaningful Experience in public space. The outcome of this study will articulate how these approaches can be employed by art practitioners in broad public contexts. In order to obtain more diverse data about how Meaningful Experiences can be invoked through engagement with digital interactive arts, further studies have been planned. The research at this point focuses on examination and analysis of the audience response and art practitioners' experiences. In the next phase, a thorough comparison will be drawn. The data that has been collected will be used to compare artists' preconceptions, together with the opinions of the MRT artwork selection panel. It is the intention of this research to develop practical methodologies and a research framework to be employed by artists and art researchers in the pursuit of more meaningful experiences in art-interaction.

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Transcultural Electronic Negotiations: The Redefinition of Public Art across Cultures and Media

The paper will discuss how contemporary artistic engagements through technological tools in the realm of transcultural public art – particularly when based on contemporary media technologies – are forms strictly depending on and intertwined to the genius loci and the cultural context of the place to which the artworks refers.

Technology – when conceived and used as an aesthetic form of electronic transcultural negotiation – is not the only defining element of the artwork or the most important one. An artwork – even if technologically based – when moved from its original cultural context, is eradicated from and becomes unrelated to the place of origin. The artwork and its aesthetic are reduced to a reflection and transformed in the expression of an aesthetic artistic choice – explicable only within the framework of the chosen technological medium – that by globalizing the context purges any cultural specificity.

The artworks reproduced and contextualized become engagements and interactions that are reduced to the level of acultural events and superficial aesthetic entertainment.

Redefining a cultural concept across multiple public spaces and across multiple cultures and media is a complex process of translation and redefinition of the audience, the medium, the aesthetic and the artworks itself.

Starting from an exhibition project titled 'Peddling Art' that is taking place in Istanbul, the paper analyzes the relationship between culture and technology – or the absence of both – in the redefinition (as a remediation and transmediation process) of the artwork and its contexts.

[...] Culture is not seen as a stable and delimited phenomenon. Rather, it is understood as emerging, as being in progress and thus continually changing, which has consequences for the perception of identity and self. (Nicole Schroder, 2005, 201)

A philosophical question to be asked, therefore, is if the role played by electronic media is based on a phenomenological interpretation of technological innovations which become expressions of social hierarchies and cultural resistance in a context of liberation versus subordination.

While subordinate peoples do not usually control what emanates from the dominant culture, they do determine to varying extents what gets absorbed into their own and what it gets used for. (Mary Louise Pratt, 1991, 36)

Istanbul, as an electronic cityscape, does not provide the public with only an hierarchical access to technology and media. The public art is a shared process through the sharing of codes and passwords that – having lost their private status as well as function of restriction and control – become a shared and transmitted knowledge of the locus. If there is space specific knowledge – for example related to historical events – there is also space specific knowledge of the electronic map of the city with shared open accesses through private electronic media, no longer protected by private passwords.

The city becomes a set of aesthetic electronic living connections and possibilities determined by the social networks to which one person does belong or is excluded from. The electronic access is not in the ownership of the technology – like in other international cities – but in the personal access to its proprietors and to a shared willingness to make the private public.

The most significant effect of this process is not the proliferation of 'alternative histories of the excluded' producing, as some would have it, a pluralist anarchy. What my examples show is the changed basis for making international connections [...] The great connective narratives of capitalism and class drive the engines of social reproduction, but do not, in themselves, provide a foundational frame for those modes of cultural identification and political affect [...] (Homi Bhabha, 2005, 8)

Particularly within contemporary electronic media – which is a terminology used in order to avoid the usage of new media now felt as old – the issues of identity are no longer solely defined by a possibility of choice, but by an active act of engagement with the technology in order to bypass issues of censorship, controlled engagements and cultural propaganda that within the contemporary optoelectronic gaze are fundamentally restricting alternative aesthetic methodologies. The use of electronic media is characterized by cultural identification, class definition, political affect and social action, determining, particularly within the city of Istanbul, the necessity of being socially connected in order to be electronically wired and internationally present.

The paper presents the idea of public space and of the artwork as no longer being that of an identified spatial locus but as an electronic definition of the possibility of existing and of the ability to reshape the perception of identity and self beyond the controls and institutional hierarchical definitions of identity. The space for public art becomes not that of social action but that of multiple personal stories and existences which, wired into the international connections of contemporary art, drive alternative forms of cultural resistance as well as interpretations and definitions of art.

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The Aesthetics of Electronic Art in Public Spaces

Our idea of the public has been informed by political and social constructions ever since Greek antiquity. It was in its apparent heyday in bourgeois society that the term “public” was defined by a whole range of social exclusions. Under the post-war era’s systemic pressure to consume, the notion of a bourgeois public disintegrated and its communicative space became mythical, i.e. “a secondary semiological system in the Barthesian sense” (Habermas).

The question today is what (public) effect art can achieve in this situation. What kind of public emerges in an age when our understanding of what is public has been fundamentally changed by the influence of digital media? These questions concern all fields of art. How can art manage to find an aesthetic form for the superimpositions and interpenetrations of different space and body constructions today?

Public space has always been a field of experimentation and research for changing patterns of perception and behaviour. While the discourse about public space in the 1990s was dominated by a perceived loss of all political functions and art practised withdrawal in the shape of almost invisible interventions, we see an exemplary restructuring of its political and social qualities today. Strategies of performance are producing a new idea of the public. Situationist explorations and interactive forms of play create situations open to audience involvement where new narrative forms are developed.

This paper describes how artists keep resisting any one-sided appropriation of the “public,” thus keeping it alive. It analyses and demonstrates various artistic strategies and tactics of the “Agon” (Chantal Mouffe), the contest for democracy. The miniaturisation of digital mobile media, their ubiquity,

generates changed public spheres. It is not the task of art to design a new techno-fetishism of “embedded technologies” or to promote acceptance of new technologies. It does, however, participate in the creation of new narrative forms striving towards a subjectification and personalization of the wide and often anonymous public space, thus re-positioning it in the technosphere.

P 11**Coded Art**

- Ivan Monroy Lopez (mx):
"print soapbox"

- Pall Thayer (is), Lon Dubinsky (ca):
The Coded Aesthetic Experience

- Doreen Hartmann (de):
Computer Demos and the Demoscene: Artistic Subcultural
Innovation in Real-Time

- Morten Breinbjerg (dk):
Poesis of Software Use. Music, Materiality and Live Coding



Code is the textual aspect of computer technology that may be loaded up on a text editor and easily changed. I'm consciously avoiding any discussion on the subject of text editors – jot down your edits on a piece of paper and then write them to new file with echo. What's important to me is that this be easily accomplished. With enough time and energy, anyone could write interesting code. The best project would be if my grandmother took the time to re-write the linux kernel from scratch, and if she kept a record of her reflections about code. As much as I like Pierre Menard, this is not feasible. The processes of code should be manageable without the need of resorting to too much external technical support. This means that code is relative. What's code for some will not be code for others.

When it comes down to it, this means that code is text written in one of the computer languages. Code is the active practice of altering half-understood text files. Codes are the static characters that silently stare back at you, and that will not even give you the illusion that you're double-guessing a machine. It's always evident that someone else was there before you, and that this person was sloppy. It's just a matter of playing along and locating those three characters in a text file that will make all the difference on whether your computer can display postscript or whether it will keep that as a secret to itself.

My one year experience as a software writer has not been so nice, but really you should ask someone else with more experience. I've only worked a little as a freelancer (whatever that means) on some random websites. I've been learning on the job (whatever that means).

There are probably other ways of saying it, but it's also fine to say that I've been bored. I don't know why. There have been projects I'm not ashamed of, but most of the time it hasn't been like that. I wish I could say I was young I needed the money but I'm not even that young anymore. Health insurance and that type of stuff is a work of fiction. My life is only as long as my computer's life.

It's depressing to see that some cliches are true. The offices of lab rats typing, looking for the key of the cookie, waiting to be rewarded with a

cookie, and kept awake with coffee. I could have passed out in front of the computer and no one would have noticed. The feeling that no one knows what they're doing. The obscure files that you can find inside of some computers. What I would do is open them for as long as I'd stand it, close my eyes, press some random keys, close them and try to forget about it. There's determinacy in software insofar as you can work like this and nothing breaks.

I wish I could live in a mountain and contemplate my mark-up. I wish it was, but it can't be and it isn't only about the code. If it was only about the code, I wouldn't need to go out of my room. I don't know what it's about, and I don't know why I'm talking about. This is the point where I start to have problems finishing my sentences. Likewise, this type of media work is complete nonsense. It's absurd that I can't find a job, and that I can't hold on to the jobs that I hate.

After one year of writing software, it's good to go back to the first things I wrote. Maybe there is something of crawling into my bed and pulling up the covers about it. Probably not. I'm just happy. It was great to have imagined an introductory Perl manual where the examples and exercises deal with generative groff mark-up.

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The Coded Aesthetic Experience

Manovich (L.M. 2010, 4/16) asserts that complexity is the new visual art paradigm and supports this with reference to digital art that transfers ideas and techniques from scientific research or is inspired by the “historically specific imagination” of 19th and 20th century art and science (L.M. 2010, 13/16). A factor related to the rise of complexity is literacy. We suggest that the traditional sense of literacy is fundamental to making, and making sense of, digital art.

Dobson and Willinsky claim that the written and printed word is ubiquitous.

“What is literally digital about literacy today is how much of what is read and written has been electronically conveyed as binary strings of ones and zeros, before appearing as letters, words, numbers, symbols, and images on the screens and pages of our literate live [...]. Yet what we see of this literacy is remarkably continuous with the literacy of print culture, right down to the very serifs that grace many of the fonts of digital literacy.” (T.D. & J.W. 2010)

Indeed, various user-generated content show that the internet is text-based. “Texting” increasingly dominates mobile communications. Reading technologies, i.e. e-readers, are redefining books. Yet, the reliance on the word has not diminished. Print remains the dominant form of communication and evaluation.

The purpose of this paper is to explore these claims within the context of digital art. The authors focus on what is entailed in learning about programming to experience “Microcodes” (P.T. 2009). Do viewers’ understanding of code enhance their aesthetic experience to allow for a level of complexity?

We probed these questions in two ways. While Thayer tried to guide Dubinsky through the fundamentals of programming, the two were engaged in a dialogue about aesthetics and literacy.

Questions raised were: a) How does code art fit into the wider scope of contemporary art? b) Why should people want to make an effort to engage with programming code? c) How do the Microcodes embody code as an expressive medium? In this paper we discuss some implications of the exercise and advance two interpretive strategies for attending to what we call the coded aesthetic experience. (L.D. & P.T. 2010)

At this juncture Dubinsky cannot fully access or appreciate the Microcodes as an active user. A further investment of effort seems the only alternative. Such commitment comes with questions that continue to inform, but also can hobble, the visual arts, digital or not. For example, isn't art expected to stand on its own and not require a private language or a skill to decipher it? Or are the Microcodes a case where deciphering is the aesthetic experience? Viewers may have the requisite skills or elect to become literate in this circumstance by building on existing ability to communicate with text.

Any art work is subject to interpretation whether it appeals to sensorial experience or meaning making. Written and spoken words convey an interpretation, but other forms of expression may at times be more appropriate. We conclude with two strategies for interpretation. The artist provided the first:

If we don't make the code part of the work visible, we have no-one but ourselves to blame if our work is interpreted as something other than what we intended. It similarly follows that as long as we keep hiding the code, those who come to experience our work will never manage to develop a proper language of interpretation. We can try to counter misinterpretation or incomplete interpretation by providing explanatory texts. But this might wipe out any possibility of ambiguity and leave suggestions to become mere statements. The aesthetic experience offered retains its qualities only if the onus is on the viewer to glean this information directly from a combined examination of the work. (P.T. 2008)

Bruner's (J.B. 1962, p.59) four aspects of experiencing art provide the second:

a) the connecting of experience that is the reward for grasping a work of art, b) the manner in which achieving understanding of a poem or picture requires an expression of human effort, c) what is moving about experiencing an object of beauty, and d) wherein lies the generality of that which we find beautiful.

Each can be applied to experiencing code-based art like other visual art. If there is an aesthetics of complexity particular to digital media, there also remain universal conditions related to literacy. Bruner emphasizes that experiencing art requires work. This need not be laborious even if learning code is central to the experience.

Bruner wrote about beauty in the early 1960s when it was a dominant aesthetic ideal. Our modern frenetic and fractious age suggests that other at-

tributes may be appropriate. Bruner allows for routes of engagement that easily apply to code-based and digital art. He writes about “the construction and exploitation of the category of possibility, the formulated but empty category through which we search out new experience.” (J.B. 1962, p.61)

Representations are the very stuff of art. We began with concerns about literacy and digital art. Microcodes suggest that there is something more here than just computer programming. Many of the codes do not appear to “do” anything when they are run. Yet, we can see that they are providing instruction; they suggest a possibility or complexity, rather than explicit instruction. They invite viewers to understand a set of representations and to make sense of coded aesthetic experiences.

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Computer Demos and the Demoscene: Artistic Subcultural Innovation in Real-Time

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What demos are (not)

The demoscene (or short: the scene) is a vivid digital subculture of approximately up to 10.000 people which work internationally and collaboratively on different kinds of non-commercial digital artefacts (e.g. hand-pixeled images, music and magazines), essentially so called (computer) demos, which are audio-visual real-time animations. Pivotal to the demo aesthetic is the syn-aesthetic experience of the interplay of electronic images, animations and sounds in connection with its computer-generated background – the demo-sceners (or short: sceners) connect artistic practices with highly elaborated computer programming techniques in a unique way.

This attempt to somehow define computer demos shows its aesthetical, cultural and technological interdependency with other digital productions in the context of new/digital media (art). Demos are oftentimes pretty close to the aesthetic of experimental (electronic) music video clips, as both of them combine electronic music and a staccato-like torrent of images but often without a valid plotline. Additionally demos use basically the same programming techniques as computer games, although they are intentionally non-interactive, in order to preserve the synchronized visual and sound experience, which is considered an important part of the creation itself. Demos and computer games are – unlike CGI (computer based imagery) movies – rendered in real-time, which means that they are not pre-calculated in a computationally intensive way and just played back on an image per image basis, but every image is rendered just in the moment the spectator is watching it.

Origins and evolution

The demoscene has its roots in the illegal cracker scene of the early nineteen eighties and the rise of the home computers – in particular the C64, Amiga and Atari ST. Back then, the newly introduced and soon widespread copy protection mechanisms for almost every software court the adolescent's resentment, especially concerning video games. As they could not effort to buy but wanted to play every new game, some of them started to remove the copy protection and spread these software cracks amongst their friends. The removal of the copy protection soon became secondary and people started to form cracker groups, which challenged themselves to provide the fastest and most improved cracks. In order to gain recognition, they put a little animation in front of every crack which was called intro. These digital signatures got more and more important as differentiation between the competing cracking crews and as the skills of those responsible for those intros grew, also the desire to solely show off their capabilities grew. Soon, the main goal for the producers became to demonstrate that they were able to use the hardware in a way originally not intended and to present these efforts in an aesthetically appealing way. The audio-visual gimmicks became self-contained artworks that were spread independently of the video games and over time their producers separated themselves more and more from the illegal software cracking crews to form the demoscene (Walleij 1998).

Is it all about restrictions?

Today's self-conception of the demoscene is reminiscent of this origin: most of the hardware limits which were in existence in the early days are basically non-existent today, but the perception is still alive that restrictions level the playing field and therefore are important to sustain the competition and lead to new creative ways to squeeze out the most impressive artworks within these self-imposed limits. These limitations could be classified into two categories: (1) limit yourself by which target device you choose or (2) limit yourself by the size of your artefact.

It's important to point out that these restrictions are self-imposed to stimulate the competition just for its own sake. Sceners however never restrict themselves when it comes to the tools they use. They are not dominated by the computer and its software, but instead always try to overcome any limits that are imposed on them from the outside. Oftentimes they write their own tools or extend existing tools to achieve some special visual or audio effects they envisioned for their work. Their technical skills seem to be a very important criterion, but as well the one that is most difficult to decide on. As compared to any other artisanry, probably the only people who can really decide on whether an effect is technically advanced or not are the sceners themselves (Tasajärvi 2004). Anyhow, for quite a while now, the digital media art scene takes notice of the demoscene (e.g. demo screenings at Ars Electronica and Bitfilm Festival and at least three exhibitions worldwide) and for some other reason appreciates their works of art. Besides the fact that from the mid nineteen nineties on, computer demos changed from pure

technical show-offs to increasingly ambitious designed multimedia productions, more general traits characterize the scene and its artefacts: (a) the interdisciplinary collaboration, (b) the ideals of originality, innovation and high quality concerning the programming itself (Carlsson 2009), (c) the sub-cultural low-budget production process or (d) the emphasis of the computer as a decisive element of the demo's aesthetic instead of its prevalent usage as merely convenient tool. I would assume that it is a combination of these aspects which determine the momentous impact demos might have on today's art scene.

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Poesis of Software Use

Music, Materiality and Live Coding

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Remediated interfaces of modern music software have deeply changed music composition and performance. Designed as visual editing machines most music software operates on sound objects, sequentially organized in time on multiple tracks.

Today, approaches to music making like e.g. live coding, a contemporary art form in which music and visuals are programmed during performance, challenges the concept of the sound object and along the materiality of music and, perhaps even more fundamental, the concept of poesis i.e. the very condition of music making. [Breinbjerg, 2010]

Materiality: From object to signal

Music per se is a time-based art form and has due to music notation a long history of literacy. A history that was broken when analogue recording technology in the 20th century turned sound into an object for phenomenological investigations. Sound was no longer just a phenomenon in time, but suddenly a phenomenon in space. As a media object it could be stored in a sound library and retrieved for analysis, manipulation and composition. Sound recording and playback led to new approaches to music composition, as in the practice of Pierre Schaeffer that originated from the listening to sound objects and not from the writing of them. The music culture of today has for a long period of time been dominated by operations of selection and compositing, or rather of cut, copy and paste taking on the legacy from Schaeffer.

Against this background live coding introduces a “literary turn,” which uncovers the symbolic and literate nature of digital technology. Rather than working with remediated time processes of sound recording and sequencer-based music, live coding engages in a distributed process of performative writing, which owes its legacy to algorithmic composition and generative music. However, in live coding the literary process is accelerated in time since algorithmic writing now takes place in a live setting, which unfolds as a discourse between the programmer and the software model. As such there is no pre-fabricated score or pre-written program, but instead a text/program code that is constantly re-written, re-read and re-executed and from which music emerge and unfolds.

Poesis: Beyond techne

As German philosopher Martin Heidegger has explained, poesis is historically conceptualized as either 'techne' or 'physis' [Heidegger 1977]. While 'techne' is a becoming of things by someone else; for instance an artist or a craftsman, physis is the arising of something from out of itself as observable in nature. In contemporary practices of music composition techne is apparent in e.g. the practice of post-production where musicians master every detail of the music they produce. Physis can be observed in e.g. generative music where descriptive models of nature (fractal geometry, cellular automata, system theory et cetera) controls how music autonomously emerges and unfolds. In live coding we observe a poesis that neither belongs to humans nor nature alone. It is not easily categorized as either techne or physis since it cannot solely be ascribed to the coding musician or the program of the computer. Instead the poesis of live coding is defined by a readerly and writerly exchange among the coder and the running program forming a distributed system of interacting elements, in which the music and its history is constantly negotiated and changed, and where new forms of music emerge and disappear. As such the poesis of live coding originates from ongoing processes of observation, interpretation, programming and computation between human and machine, between the analogue and the digital world.

As a framework for further discussions on live coding and software use, and how it reflects fundamental aspects of digital culture, I will point to the theory of Paul Virilio and Nigel Thrift. As Virilio has argued media technologies accelerate time as well as our perception [Virilio 1991]. As a result motion is emphasized more than form. In the context of live coding we might add process more than object. Rather than revealing objects, art practices like live coding unfold in processes where the object is always in a state of becoming. Related, Nigel Thrift describes how the static representation has become subordinated to flow, and how the city and the culture as a whole can be said to "perform" since pervasive technologies ensure ongoing processes of calculation, exchange and changing perceptions [Thrift 2008].

For me live coding reflects a contemporary media culture as described by Virilio and Thrift. A culture where concepts of emergence and morphogenesis hold a greater descriptive potential than reification and morphology does. An accelerated culture more concerned with "signals" than with "objects"; with computation, process and performance rather than reflection, history and representation.

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Keynote**The Tongue That Sees.
Neuroaesthetics,
Molecular Aesthetics
and Media Aesthetics****Peter Weibel** (de/at)Centre for Arts and Media Karlsruhe (ZKM)
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Classic media theory, from Bergson to Stiegler, from Freud to McLuhan, is in the main an organological theory of media. Media are interpreted as extensions of the sense organs, with each new medium redefining the relationship of the senses to one another. The synaesthesia of the turn of the century (from Skrjabin to Kandinsky) has opened up the new chapter of „Seeing Sound“ in the avant-garde film of the 20s and 30s, which eventually led to the MTV mainstream. Now we are on the threshold of a material revolution radicalising the synaesthetic programme in which one sense organ (the eye) partially takes over the function of a different sense organ (the ear): Any given sensory organ can take over the functions of any other sense organ. The brain appears to be sufficiently adaptable to allow the networking of all sense organs with each other. What was once seen as a paranormal phenomenon has today entered a phase of technical realisation, due to the promises of biotechnology and information sciences. The discredited Nobel prize laureate Professor Brian Josephson, Director of the Mind-Matter Unification Project of the Theory of Condensed Matter Group at the Cavendish Laboratory, Cambridge, has been proven right by the experiments of neuroscientist Paul Bach-y-Rita. In molecular chemistry and in nanotechnology, the utilisation of natural resources, including the human being, is continuously advancing on the micro level of matter. How neuroaesthetics and molecular aesthetics can open up new horizons. And fields of action for media art is the subject of this lecture.

P 12

Sonic Strategies

- Rachel O'Dwyer (ie):
Sound in the Networked City. Investigating the Role of
Sonic Experience in the Informational Society
- Yolande Harris (nl):
Making the Inaudible Audible: Strategies and Disagreements
- Martin Howse, Shintaro Miyazaki (de):
Detektors. Rhythms of Electromagnetic Emissions, their
Psychogeophysics and Micrological Auscultation
- Marc Chia (sg):
From Aleatoric Machines to the Future Sounds of Folk

Sound in the Networked City

Investigating the Role of Sonic
Experience in the Informational Society

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Current discourses in urban computing explore the possibilities for new forms of sociality and aesthetic experience over networked media platforms, referencing practices that utilise the potential for geo-location, wifi coverage, and inter-device connectivity in urban space in order to consume, produce, and distribute diverse media content. The convergence of urban space, mobile actors and dynamic network topologies provoke new sociotechnical possibilities for the city dweller. While research in urban computing is frequently biased towards urban screens and visual interfacing, it can be argued that such an enquiry is particularly relevant to contemporary auditory experience. Increasingly, our everyday sonic experiences are interleaved with new mobilities, spatialities and networked infrastructure. It is relevant therefore to investigate how mobile sound and its exploration through media art and design practices could provide a platform for engaging with networked space, both in terms of possibilities for new cultural practices, but furthermore with regard to its critical engagement with network topology, often sonifying the complex interplay of social and informational networks that occurs with mobile media distribution in urban space.

Ways of conceiving urban space have shifted dramatically as a result of new mobilities, telecommunications infrastructures and virtual spatialities. The ubiquity of mobile media in the city engenders what is sometimes termed 'hybrid space' understood as multiple modes of spatiality enfolded together, as electromagnetic signals interleave and virtual platforms migrate from traditional desktop scenarios, becoming nested in the everyday rhythms of the urban environment. With these practices we witness a shift from bounded ontological accounts of space, with strict dichotomies between public and private, real and virtual, towards a metastable geography constantly performed by the mobility of people, objects and information. Mobile audio devices are arguably the first instance in which hybrid spatiality occurs, blending the physical spaces moved through with the virtual soundscape the listener carries on their person. Where the predominant listening experience of the city dweller is now channelled in this fashion, it is intricately connected with the management and production of urban experience. Until recently this auditory practice was largely individuated, limited in correspondence between the space traversed and the possibilities for

co-present interaction. However, as mobile devices become increasingly amorphous, often combining communicative capabilities with media production and consumption, they afford new practices involved in the networking of sonic experience. How might these media practices provide listeners with tactics to articulate and engage with the networked city?

The shift away from individuated listening towards interconnected soundscapes is endemic of a broader shift in mobile media ecologies from passive audiences towards what Varnelis et al. term the 'networked public' model (Varnelis, 2008), referencing linked practices of production, consumption and distribution that have emerged from decentralised networks and convergent media technologies. When these new practices: peer-to-peer music distribution, podcasting and networked composition and performance, migrate into mobile platforms, they provide new agencies for media publics in city spaces. While a number of different approaches within media art and critical design explore these possibilities, situating audio work within geo-spatial contexts, sonifying electromagnetic signals, and utilising various urban mobilities for musical composition, this paper focuses on the use of mobile ad hoc and personal area networks to consume, produce, and distribute sonic artefacts in urban spaces. These are network topologies which, rather than relying on a centralised relay structure, utilise pair-wise connectivity between mobile devices in proximity, producing a highly dynamic and decentralised topology that reflects the correspondence between social and informational networks in contemporary cities. Instead of a soundscape that is propagated on the air, here it is carried by the various mobilities already present in the city, the "chorus of idle footsteps" (de Certeau, 1984, p97), public transport infrastructures, crowd behaviours and the episodic connectivity of friends and familiar strangers.

Notable works such as Atau Tanaka's *Mobile Music Making* (Tanaka, 2004) and Bassoli et al.'s *Undersound* (Bassoli, 2007) are examples of media art and design initiatives that engage mobile networks to produce soundscapes, leveraging the sociotechnical possibilities of music on the move. Not only do these designs suggest new aesthetic and social practices for city spaces; through the interconnection of human mobility with the network architecture, they suggest novel ways of mapping and articulating the intricacies of networked space. This is an important area of enquiry therefore, not only for the novel listening experiences it facilitates, but also for the critical insight into networked space it provides; knowledge that in turn can be applied to the design of future mobile devices, networks and urban planning policy for the city.

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Making the Inaudible Audible: Strategies and Disagreements

The study of environmental sound highlights the limitations of human perception. Sonification and audification predominantly use scientific methods that favor transformation of sound to the sweet spot in the middle of our hearing range. This approach overlooks the different perceptual effects of high and low, loud and soft, fast and slow sounds. It is my contention that in our interpretation of how to make inaudible sound audible, we must consider the strengths and limits of human hearing and listening.

The work of acoustic ecology focuses on listening to emphasise an awareness of the overall soundscape (Schafer 1977). This is usually limited to areas where it directly affects human presence, and it is largely because underwater and ultrasonic are inaudible to us that we are unaware of the impact of anthropogenic over biotic and abiotic sounds. Acoustic levels underwater are unregulated, and given that sound is essential to marine life, the impact of additional sounds is having considerable consequences. (Stocker 2002, Slabbekoorn 2010)

Sounds can be inaudible or unperceivable to us in different ways. The basic parameters are sounds that lie out of our frequency range (above 20,000 hz and below 20 hz), beyond our amplitude sensitivity (either too quiet or loud), and of a time frame that may be imperceptible to us (too fast or slow). To compare the scientific to musical terminologies: frequency/pitch, amplitude/volume, and time/rhythm or form. In what ways can these sounds be folded into our relatively narrow perceptual bandwidth?

Scientists and composers, limited to discipline-specific methodologies, are driven by different motivations and priorities in the analysis and use of sound. As a result approaches to making the inaudible audible generally fall into two camps of analytically strict systems or more intuitive translations. Can

scientists, musicians and artists learn from each other in this relatively new area? To what extent do we question the “ostensible neutrality of these listening technologies” (Kahn 1999; 200), given that listening is both personal and contextual? (LaBelle 2007) When making the inaudible audible, what happens if we consider not simply what we hear, but how we listen?

I identify two distinct but overlapping approaches to making the inaudible audible: audification by scaling existing vibratory signals into human hearing range; and sonification of data by translation and mapping onto a choice of sounds. Audification uses the existing signal as its basis, while sonification requires compositional strategies of mapping data (non-vibratory information) onto sounds. Another common strategy is visualisation where sound is represented graphically depicting the parameters of frequency and amplitude over time. The analysis of humpback whale sounds (Payne and McVay 1971) demanded visualising the sound waves to reveal recognisable patterns, now called ‘songs’, which are too slow to recognise by ear.

Alvin Lucier’s work can be said to be making the inaudible audible or at times visual in space (Lucier 1995; 152). In “Music for Solo Performer: for enormously amplified brain waves and percussion” (1965) EEG electrodes on the performer’s head translate alpha waves into electrical signals which are amplified, but not frequency shifted, so they remain below our hearing range at between 8 to 12 hertz. These are made audible by using the loudspeakers to physically activate percussion instruments placed throughout the space. This early piece combines audification of existing signals and sonification of those signals into sounds.

In “Listening To What I Cannot Hear” (2009), composer David Dunn lowers the overall frequency of ultrasonic recordings of bats and household appliances, to make us audibly aware of sounds we create but cannot usually hear. Dunn and scientist Crutchfield’s groundbreaking environmental work highlights sound as the key to a series of feedback loops relating climate change to drought stressed trees to bark beetle infestation. By placing Dunn’s custom-made microphones in infested trees and amplifying the results, this example of audification has advanced scientific research. (Dunn and Crutchfield 2009)

Even when we can hear sound, it does not mean that we can understand it. Music offers profound insights into listening and making sense of previously inaudible sound. Underwater bio-acoustic scientist Michel Andre called on Senegalese drum master Arona N'Daye Rose to help interpret possible rhythmic structures in sperm whale echo-location clicks. From the apparent cacophony, Rose rapidly deduced the number of whales in the group, a conclusion that took the scientific team six months to determine. (Andre and Kamminga 2000)

Sonification needs to take into account our physical abilities, including how clearly and quickly we can perceive changes and patterns. In *Sun Run Sun* I explored the sonification of live GPS navigation data, listening to the satellites moving in and out of focus overhead while walking through the environment. In a continuation of Lucier and Dunn’s work, this sonification provokes

an aesthetic rather than practical response. When there is no change in data, 'silent spots' emerge, and this draws ones attention back to the immediate environment (Dekker 2009). These projects illustrate that the choice of sounds we use in sonification, and the choice of scaling factor in audification, will inevitably affect what we hear and ultimately how we interpret it.

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Detektors

**Rhythms of Electromagnetic Emissions,
their Psychogeophysics and Micrological
Auscultation**

Almost any electronic gadget can be transformed into an audible and sometimes rhythmical sound object. "Detektors" presents such a transforming device, making manifest both a cartography of user-generated geolocational sound recordings, logs and walks, which reveal hidden electromagnetic geographies of our urban areas, and a database or catalogue of sonic studies of electromagnetic emissions produced by our everyday electronic devices.

At the beginning of the 21st century we are surrounded by ubiquitous electromagnetic oscillations, which are more and more results of computational protocolled processes, which turns them to algorhythms. "Detektors" suggests a new form or methodology of the *dérive*, possibilities afforded by a novel geophysical terrain. Psychogeophysics meets algorhythmics, as use of the detectors in city space allows for novel city play algorhythms.

"Detektors" is an open, collaborative project and uses sonic strategies to make audible the hidden infoscapes of our time. Unlike similar projects, with "Detektors" you can also hear the high frequency band. This means that you are able to hear modulations of WiFi, Bluetooth, GSM, UMTS, GPS and other transmission systems which are in the 100MHz-5GHz region of the spectrum. With a special built-in mini-coil you can listen to your computer, iPod, iPhone and other electronic devices. It is planned to build up progressively an online database of electromagnetic field recordings, where collaborators can upload individual recordings of their environments. The database will be linked to a map of the world (google maps), where you can browse through the diverse recordings similar to wandering through map-based



Fig. 1: Prototype Detektor Photo: Martin Howse

social networking sites. User-generated sound log-files shall reveal a hidden electromagnetic geography of our urban, but also rural areas. Additionally it is planned to generate not only a location based, but both a category and object based browsing and archive method.

The notion of algorithym (Miyazaki 2009) is a result of the transversal thinking of algorithm with rhythmic, therefore to think the symbolico-calculational with the sonic, thus the physical. The notion of rhythms gets viral in this kind of thinking. As rhythm is defined by Plato as the order of movement it is easy to understand changes of voltage in semiconductor circuits and movements of molecules in the air as rhythmic fluctuations. As soon as there is a combination of abstract sequence-controlling scheduling and the idea of automation with real world signals or actions, thus, as soon as it is possible to integrate the real with the symbolic, in a way that humans don't notice differences between them anymore, we can speak of a time critical discrete control of electric signals, thus of algorithyms. They occur when real matter is controlled by symbolic and logic structures like instructions written as code. "Algorithyms" let us hear that our digital culture is not immaterial, but consists of lively, rhythmical, performative, tactile and physical behaving machinic assemblages.

With psychogeography readily defined as a playful examination of the total effects of geography and place on the individual, psychogeophysics extends such research to embrace the geophysical, namely earth science measurements and study.

Psychogeophysics thus as a novel discipline can be defined as crossing the particle/wave and code distinction, offering a speculative take on future code; an uncovering of potentials in code as a new phase of software studies. The extension of psychogeographics into geophysics implies a collision between fiction (as software) and materiality, with geophysics defined as the quantitative observation of the earth's physical properties, with an emphasis on the magnetic field. Geophysics equally encompasses archaeological

geophysics, with measurement of such properties allowing for the mapping of previous traces; an extension into questions of detection and forensics.

Expanding a clear concern with electromagnetic [EM] phenomena as a question of substance, and extending the spectrum of artistic concerns to embrace modern data space, the research attempts to bridge an impossible divide between the physical and the protocol (code); asking how, within complex spectral ecologies, it is possible to examine and embrace both the carrier and the signal, to observe subtle interactions and inherent abstractions. In this context, such an examination becomes a manner of revealing; revealing another city, revealing new modes of communication and transmission (hidden networks).

Technical Details

The detektor hardware is designed to record emissions under a wide range of (signal) conditions. An operational amplifier circuit amplifies induced current within a small coil of wire to detect highly localised, nearfield low frequency emissions. An Analog Devices AD8313 Logarithmic Detector chip demodulates and amplifies wide band higher frequency signals which extend widely through space. These twin signals are sampled (by a microcontroller) and recorded on micro-SD card with a direct USB connection (mass storage) implemented for easy uploading to the computer, and thus Internet. The device uses a small rechargeable battery, and a headphone amplifier is also included to monitor either of the two signals. The design is under active development at the prototype stage.

Further Directions

“Detektors” is an ongoing project. We are looking for collaborators and supporters all over the world.

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From Aleatoric Machines to the Future Sounds of Folk

Introduction

What follows is a condensed run through of the various processes that have directed my research and practice over the past years, in search for my own narrative in relation to my sound/performance practice and the sounds of the *post-folk*.

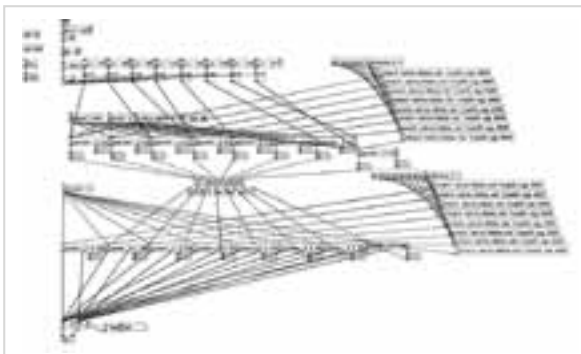


Fig. 1: Bufferrrbreakkkdownnnn Arkestra

Sun Ra Lives on in the Fiber-optics

Around 2007, after trying my hand at building various stochastic musical instruments based on simple deterministic and non-deterministic systems, I turned to streaming networks to provide the ever present instability and randomness to the instrument, mixed with an equal dosage of system overloads, the *Bufferrrbreakkkdownnnn* Arkestra was born. Rather than playing notes, or triggering samples, I was playing the networks, by controlling the

concurrent sending and receiving of 8 sine tones of different frequencies to and from 8 separate streaming servers. This manipulation creates fluctuations in the networks which in turn causes the computer to overload (as sometimes it's trying to receive when the sending signal is cut temporarily) leading to the cacophonous rhythmic glitchfest that erupted semi-aleatorically. Sun Ra lives on – in the fiber-optics.

Putting The Soul Back Into The Electronics

As a musician whose main instrument is the computer, one of my early goals is to turn this unintuitive, intangible Pandora's box into a legitimate musical instrument capable of being the medium in the transmission of my expression. By using a serial controller that has LEDs behind each of its 64 buttons (monome.org), I was able to finally do away with the computer screen altogether; this controller was augmented with a traditional midi controller that has piezoelectric elements installed into its guts to pick up all the subtle movements of faders and knobs. With this, I was able to put the incidental sounds which are inherent in all acoustic instruments back into an electronic music instrument.



Fig. 2: One Man Nation

Medium; Transmissions From The Aether

My solo sound/performance work as One Man Nation was described by Portuguese collective Soopa as a performance that transmitted a deep narrative feeling of geopolitical disenchantment, ingrained into dark textures. This disenchantment exists on more levels than purely narrative, it is exercised by the use of every part of my body as a whole, that presence with the inclusion of the sounds produced by the intended or accidental gestures and physical actions – everything is technology making anything and everything potentially an instrument, a source of sound, a critique – the avoidance of a



Fig. 3: The Future Sounds Of Folk – Bambu Wukir with One Man Nation

priori drawn ways, ontologically reinventing the possibilities of life, and as a living performer/artist, exploring all the possibilities in the here – in the now.

Since earlier mutations of the current performance, the goal has ultimately been to seamlessly mix different elements such as, but not limited to, computer/traditional/ritual music/processes, performance art and improvisation together into a cohesive piece that takes the end user into a state of intimate unreality.

The Future Sounds Of Folk: In the search for the Post-Folk

Since the beginning of 2010, I have been in Indonesia doing field work on a project I developed a year and a half prior with Steim and The UnifiedField called The Future Sounds Of Folk. The project tries to explore different ways of interpreting the past musical heritage of Indonesia with a contemporary vision and attempts to create an emerging musical movement based on the preservation/diffusion of declining and/or lesser known musical forms.

HTTP://

- One Man Nation – <http://www.onemannation.com>
- The UnifiedField – <http://www.theunifiedfield.org>
- The Future Sounds Of Folk – <http://www.thefuturesoundsoffolk.com>.

P13

Still Accessible? Rethinking the Preservation of Media Art I

Hosted by imai – inter media art institute,
Düsseldorf

inter media art institute

imai

Der Ministerpräsident
des Landes Nordrhein-Westfalen



- Renate Buschmann (de):
Still Accessible? Rethinking the
Preservation of Media Art
- Rudolf Frieeling (de/us):
Between Remake and Reperformance:
Emerging Narratives in Media Art
- John Bell (us):
Archiving Experience. The Third Generation Variable
Media Questionnaire
- Gaby Wijers, Rony Vissers (nl):
Obsolete Equipment. The Preservation of Playback
and Display Equipment for Audiovisual Arts
- Tiziana Caianiello, Julia Giebeler (de):
Conserving Interactivity: imai Case Study on
Bill Seaman's *Exchange Fields*

This panel assembles experts concerned with the complex issue of conservation and restoration of media art installations, who will present their recent research on restoration practices.

**Renate Buschmann** (de)imai – inter media art institute
Director**Still Accessible?
Rethinking the
Preservation of Media Art**

In recent years it has become ever more apparent that the demands media art places on museums and exhibition centres is greater than the usual degree of care traditionally provided by curators and conservators. Media art is difficult to define because it attempts to cover an extensive range of varying works of art which is difficult to quantify and furthermore in this decade terms such as “time-based” and “technology based” art have increasingly come in. It is nonetheless possible to come up with a set of characteristics to describe media art which enables clarification of the requirements for dealing with this type of art:

- **Transient:** media art works possess a tangible link to the technology used at the time of their creation. Due to rapid technical innovation they are subject to the transient nature of materials which to a certain extent is comparable to the short life of organic materials in art works.
- **Installation-based:** the playback and display equipment essential for media art works have a spatial presence and therefore media art works are often considered as installations.
- **Performative:** media art works are based on a time frame determined by a number of display modes of the various image media and can therefore be perceived as performative art works.
- **Participatory:** it is not uncommon for media art works to include an additional participatory dimension where the public actively participates in the functionality of the art work and for this interaction to function the preservation of the technical means is essential.

Under consideration of these hybrid characteristics, curators and conservators are faced with the question of how to adequately handle media art works in connection with museums, whose mission is to maintain the originality and authenticity of the art work while at the same time enabling

the exhibition of the respective work. This naturally includes art works which were created in the period from the sixties to the eighties and which are considered to be of historical significance. Yet art works we may consider as “young”, based on the now already obsolete technology of the nineties, are also subject to the same problems much earlier than previously supposed.

The awareness of the need to do basic research and develop target-oriented procedures for the preservation and presentation of media art has risen considerably in recent years. A number of notable international research projects such as *Inside Installations*, *Matters in Media Art*, *AktiveArchive*, and *DOCAM* have served to develop primary concepts, guidelines and instruments in this area. The international conference “Contemporary Art: Who cares?” in June 2010 confirmed that these efforts are on-going.

The imai – inter media art institute founded in 2006 has dedicated itself to communicating the special expertise in the field of media art preservation to restorers, curators, researchers, artists and students of these disciplines. This commitment is based on the history of its own collection. It was necessary for imai to preserve its extensive historical and valuable collection of mainly single-channel video art and documentary works. The process was primarily concerned with the transfer of the original analogue videos over to digital media. So far more than 1,300 audio-visual works of the imai collection have been digitized, which are now accessible to the public via an online catalogue. This action has additionally identified the greater challenges faced by exhibition authorities in connection with the preservation of complex, multi-part media art installations. The imai research project “Konkretionen des Flüchtigen” (Materializations of the Fugitive) uses case studies such as Bill Seaman’s interactive installation “Exchange Fields” (Museum Ostwall collection, Dortmund) to examine this theme.

The extent to which it is possible to authentically transfer the media art of recent decades to future generations decisively depends on the current measures used for preservation and restoration. The panel *Still Accessible? Rethinking the Preservation of Media Art* presents initiatives such as *PACKED* and the third edition of the *Variable Media Questionnaire* to provide the resources and instruments to facilitate the collection of substantial information and adaption and transfer of techniques designed to preserve the function and concept of media art. The common view today is that the continuous change from obsolete to new technology is seen as an unavoidable step for media art works. Yet the implementation of new technology and its subsequent influence on the materiality of these works poses fundamental questions which voice concerns regarding loss of originality and the degree of co participation of the respective artist. The panel *Still Accessible? Rethinking the Preservation of Media Art* should communicate the need to rethink preservation techniques and pass on knowledge which can only be gained by the constructive interaction of curators, conservators, artists, technicians and researchers.

Between Remake and Reperformance: Emerging Narratives in Media Art

Rudolf Frieling (de/us)

SFMOMA
Curator of Media Art

No other term has worse connotation than the remake of an original film, inviting an unflattering comparison to the older original, a comparison it rarely survives. We immediately suspect a flawed and lukewarm aesthetic, and a dubious revisionist interest compromising whatever dear memory we might have of what only then becomes identified as the “original.” But prompted by media and contemporary art, this pattern has fallen apart. And maybe it was never true in the first place. The urge to go back to zero and do it again might be prompted by a much more complicated affair that emerges from the narratives of contemporary and media art.

In the past, a widely held belief positioned the genre of performance as antithetical to a collecting art institution. A strong motivation for historic performances had been precisely their anti-institutional drive. They remained a final bastion of originality, based on the presence of the artist. An analysis of the relationship between performance and document, however, sheds a different light on what is perceived now as a much more hybrid construction. As we know from the philosophical and political critique of the archive, no document exists that is not processed, categorized, formatted, in short produced by the archive. Maybe it is time now to stress the role of the museum in producing artworks. The debate that was generated by two performative museum shows in New York earlier this year, Marina Abramovic’s retrospective at MoMA and Tino Sehgal at the Guggenheim, underlined a fascinating conflict: in order to distinguish itself from the performing arts, “performance” needs to introduce a difference to the theatrical script or musical score. Sehgal thus detaches himself from the body-centered tradition of performance developing situative “interpretations”, whereas Marina Abramovic insists on the possibility of a remake, now called “reperformance”.

Looking at these more recent developments in contemporary art, we need to review two decades of symposia and workshops on the preservation of media art, which after all is performative in a fundamental way. One thing seems certain in the modern networked society: more and more people realize that ‘It’s complicated’ is by far the most realistic status update on any relationship, and that includes all relations between artist, institution, and the public. Our collecting art institutions need to embrace an open relationship and open up to debate and collaborative thinking. Models and systems will give way to emerging narratives that will capture the notion of experience in an unprecedented way.

John Bell (us)Still Water, University of Maine, New Media
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Archiving Experience

The Third Generation Variable Media Questionnaire

Introduction

The Third Edition Variable Media Questionnaire (VMQ3) is an information system based on a seemingly paradoxical goal: it seeks to preserve artworks by describing how they can be changed. Implicit in this goal is the acknowledgement that the physical components of any artwork, regardless of medium, will eventually degrade and lose their power; the only variable is time. Unlike a traditional museum collection management system that takes a physical artifact to be the point of greatest fixity in an artwork and thus focuses on preserving the artifact, the VMQ3 suggests that there are other aspects of an artwork that may be at least as important to preserve as the artifact itself. If the traditional system is premised on a fixed physical artifact, the VMQ3 is premised on a fixed experience of an artwork.

The Artifact

The VMQ3 does not disregard the significance of an artifact, it simply recognizes that artifacts are subject to failure. The important question then becomes what to do when a failure occurs. Instead of treating an artifact as a monolithic entity, the ontology of the VMQ3 conceives of the artifact as a collection of abstract parts held together by connections and interfaces. This collection of parts and connections provides a framework in which the material artifact can be described. When one of the material parts of the artifact fails, however, the abstract part provides a point of reference for how to restore or replace it within the context of the artwork as a whole (Bell 2009).

For example, one of the test cases for a previous version of the VMQ was Nam June Paik's TV Garden (1974). This video installation piece requires a number of television monitors to be spread throughout a space. As part of porting the case study from the previous version to VMQ3, these television monitors were classified as a "Media Display" type part. The abstract "Media Display" part is associated with a number of questions about how the televisions should be replaced in new showings of the piece, such as "how should you accommodate changes in resolution" and "how should the media display be integrated into the exhibition space." These questions, along with those that are associated with the other abstract parts that make up the piece, can be posed to people associated with the work with the answers providing guidance for future exhibitions.

The Experience

Though the questions associated with an abstract part seek to describe parameters for the use of that part within the work, the answers to those questions often serve to convey what a stakeholder feels is the fundamental point of fixity they wish to carry forward into future versions of their artwork. For Paik's TV Garden, the preferred answer to the question "How should you accommodate changes in resolution?" is that resolution should be increased or decreased to match the current hardware; using the original hardware is only an acceptable solution, not the preferred one (Ippolito 2009). Paik's interview indicates that he prioritized the scale of the media displays over specific technical details like resolution or color depth to the extent that using his original equipment is less important to him than maintaining the experience of the viewer.

Not every artist would be as flexible as Paik, however, and the VMQ3 always offers preserving the original artifact as a viable alternative. Even then, the VMQ3 attempts to provoke thought about how to go beyond maintenance of a physical artifact by providing several abstract parts that have no physical analogue. Some parts ask questions about how people should interact with the work, ranging from the passive "Viewer" rules to "Participant" and "Performer" parts that are more active. The "External Physical Reference" part asks how an element that is not part of the artifact itself can be replaced should it change between exhibitions. Some creators may choose to include the "Key Concept" part if their work addresses an important point that should be considered in any future attempts to recreate it. The artist may not have even considered these points when the work was being made, but in an attempt to preserve the experience of the work the VMQ3 asks them anyway.

Conclusion

In redefining the critical aspect of an artwork to be its point of consumption rather than its point of creation, the VMQ3 also makes some potentially provocative decisions that go beyond the scope of a museum collection. For example, basing preservation on such a highly subjective foundation as

experience opens the possibility of interviewing a variety of stakeholders about the work, from the artist who made it to a viewer off the street who just happened to see it in a gallery. Of course, conservators and curators may hold one to have more influence than the other, but the VMQ3 allows both to give their view of the piece. This sort of implication that emerges from its shifted premise may be the most valuable aspect of the VMQ3 as it provides a unique framework for conceptualizing not just preservation but the artwork itself, potentially exposing perspectives on the works it describes that had not been considered before.

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Obsolete Equipment – the Preservation of Playback and Display Equipment for Audiovisual Arts

Media art is an invaluable and extremely fragile part of our modern cultural heritage. Media artworks (e.g. video art, interactive art, net art, computer art, media installation, media performances...) distinguish themselves from more conventional artworks by the use of electronic media for artistic expression. These works are encoded and usually stored on a physical storage device such as digital or analogue videotape, optical discs, and hard disks... and they require playback and display equipment to be viewed. The use of the rapidly ageing media technology for the recording, storage, playback and display of the media artworks affects their stability. The most obvious problem for their preservation is the obsolescence of physical storage and display formats. If the storage format becomes obsolete, one risks not being able to view the work anymore. If the display equipment becomes obsolete, the translation into new display devices (e.g. from a CRT monitor to a flat screen monitor) might change the meaning of the artwork. These are two of the most appealing challenges regarding the preservation of media art. The technology and associated knowledge are in many cases still available today but are rapidly becoming obsolete. If we don't act quickly both will disappear and we risk losing a part of our modern cultural heritage.

A year ago PACKED [i] and the Netherlands Media Art Institute (NIMk) [ii] started the research project 'Obsolete Equipment' [iii] to improve and to ensure the digitisation and long-term preservation of media artworks. The point of departure of this research project was that all technical equipment, even despite all efforts, would sooner or later become obsolete. The obsolete technologies and ephemeral materials used by media artworks are not necessarily considered for eternity and address the notion of change and

variability. This also implies that we need to know certain things in order to be able to preserve a media artwork for the future.

The following questions need to be asked regarding the preservation of media art:

- What is important to preserve with regard to a media artwork and how can this be preserved?
- What are the essential aesthetic and technological elements that absolutely need to be preserved if the artwork is to retain any integrity into the future?
- What is essential to the determination of origins and authenticity of the artwork?
- Do we have to accept a greater degree of loss than contemporary art conservation is used to?
- What is the estimated lifetime of a media artwork? How can this lifetime be calculated?
- When do we consider playback or display equipment as unavailable? When do we have to act in order to anticipate the approaching unavailability?
- Who has to answer these questions and where do they need to be discussed?

Since July 2009 PACKED and NIMk have tried to answer these questions. We inquire into the technical and ethical aspects by researching resources and surveys. We also work on case studies in order to collect best practices regarding the preservation, migration and emulation of media artworks that are threatened by the obsolescence of playback and display equipment, and on the preservation of the necessary equipment itself.

The first phase of this project runs until July 2010 and is dedicated to video art. We started with a questionnaire that posed questions on the collection policy for equipment, the storage and maintenance of equipment and the training of people in charge of the equipment. This questionnaire also became the basis of a series of interviews.

We interviewed: experts as Pip Laurenson (TATE), Christoph Blase (ZKM) and Johannes Gfeller (AktiveArchive), technicians and other specialists from o.a. Philips and Barco – staff of television archives such as VRT, Brussels and NIBG, Hilversum the artists.

The outcome of the interviews and case studies will allow us to create a set of preservation guidelines. Our research also made it possible to compile an inventory of the obsolete playback and display equipment that is still available and that is essential to continue to exhibit certain audiovisual artworks that are part of public collections in Belgium and the Netherlands. We also identified persons in Belgium and the Netherlands (and in some neighbouring countries) who still possess the necessary technical knowledge and experience to maintain such obsolete playback and display equipment.

As Pip Laurenson points out: "Discussions about authenticity and time based media works of art will become more prevalent in time" (Laurenson, 2006) [iv]. Inspired by the Variable Media Network [v] and DOCAM [vi] a

The video based case studies are:	The computer based case studies are:
* <i>Oratorium voor geprepareerde video player en acht monitors</i> (Frank Theys, 1989, collection M HKA)	* <i>I Hate</i> (Imogen Stidworthy, 2007, M HKA collection)
* <i>TV-Quiz Dehor</i> , 1993 (Guillaume Bijl, 1993, M HKA collection)	* <i>Headlune</i> (Anne-Mie Van Kerckhoven, 1989-1999, S.M.A.K. collection)
* <i>Untitled</i> (Card and Julie) (David Claerbout, 2000, M HKA collection)	* <i>Mondophrenetic™</i> (Herman Asselberghs, Els Opsomer and Rony Vissers, 2000)
* <i>Inset Coin</i> (Hans Op de Beeck, 1999, M HKA collection)	* <i>E-volved Cultures.XXWide</i> (Driessens & Venstaple, 2007, NIMK collection)
* <i>Bach Two Part Invention</i> (Jonathan Horowitz, 1998, S.M.A.K. 7048/G00)	* <i>‘lichtkrant’</i> (Jenny Holzer, Kröller-Müller Museum)
* <i>Mon - Sun</i> (Jonathan Horowitz, 1996, S.M.A.K.)	* <i>Tekenmachine 4 en 5</i> (Jochem van der Spek, 2008, Stedelijk Museum Amsterdam)
* <i>Battered Tears</i> (Dennis Oppenheim, 1994, S.M.A.K. collection)	* <i>Super Ball</i> (TM sisters, 2004, Van Abbemuseum collection – under reserve)
* <i>Das Ende des Jahrhunderts</i> (Klaus vom Bruch, 1985, S.M.A.K. collection)	* <i>No Ghost Just a Shell</i> (Robof) (Philippe Parreno and Pierre Huyghe, 1999-2002, Van Abbemuseum collection – under reserve)
* <i>Black and White</i> (Nan Hoover, 2001, NIMK collection)	
* <i>Straggling</i> (Christiaan Bastiaens, 1995, Kröller-Müller Museum collection)	
* <i>Project I-90</i> (Peter Struycken, 1989-90, Stedelijk Museum Amsterdam collection)	
* <i>Panta Rhei</i> (Ricardo Fugistahler, 1988, ICAI collection)	
* <i>Mil x Molen</i> (Berf Schutter, 1982, ICAI collection)	

Fig. 1: Case studies

whole new framework and vocabulary have been introduced using notions such as ‘medium independent’, ‘variable’, ‘behaviour’, ‘migration’ and ‘emulation’. A recent alternative to the concept of ‘authenticity’ is the notion of ‘historically informed performance’. This concept is widely spread within musical performance criticism and seen as a concept related to authenticity. It describes how music was performed in the age in which it was written.

With the video art based case studies we learned to understand what might constitute an authentic installation and to make the preservation of such an installation possible. In the next phase (start July 2010) the focus will be changed from the preservation of video-based artworks to the preservation of computer-based artworks.

References

- [i] www.packed.be
- [ii] www.nimk.nl
- [iii] www.packed.be/en/projects/readmore/obsolete_apparaatuur/
- [iv] www.tate.org.uk/research/tateresearch/tatepaper/06authum/larenson.html
- [v] www.variablemedia.net
- [vi] www.docam.ca

Conserving Interactivity: imai Case Study on Bill Seaman's *Exchange Fields*

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The authentic preservation of interactive installations and their appropriate re-installation are challenging because of the basic conflict between the preservation of the equipment and the preservation of the functionality of the installation. Here this conflict is discussed exemplarily for Bill Seaman's interactive video installation *Exchange Fields*. The installation was developed for the exhibition *vision.ruhr* at the *Zeche Zollern* in Dortmund 2000 (fig.1), and acquired by the *Museum Ostwall*, Dortmund. Only ten years later the museum staff had changed, so detailed knowledge about *Exchange Fields* got lost.



Fig. 1: First presentation of *Exchange Fields* at Zeche Zollern, Dortmund, 2000

In order to detect the parameters for future presentations of the work, the *imai – inter media art institute* (Düsseldorf) carried out a case study on *Exchange Fields* in cooperation with the *Cologne Institute of Conservation*

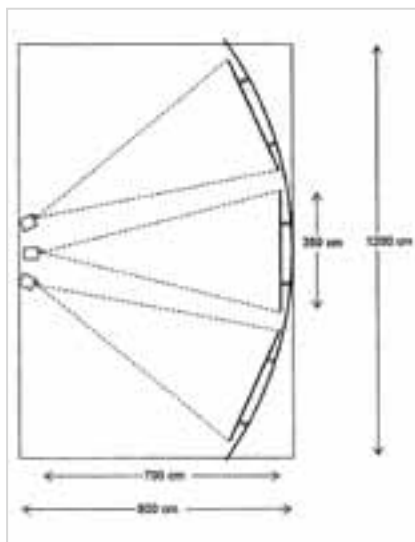


Fig. 2: Specifications of the projections



Fig. 3: Video still of one of the interactive dance videos

Sciences / University of Applied Sciences. The case study was supported by the State of North Rhine-Westphalia, Germany.

The installation consists of three projection screens (fig. 2) and thirteen interface objects. Each object is equipped with infrared sensors and is supposed to be used by visitors with a particular part of the body. By refracting the infrared sensors, the user triggers a dance sequence on the central screen (fig. 3) which is poetically related to the body part represented by the used object. Dependent on the number of users, up to four videos can be layered upon each other. These features enable interactivity between the user and the installation and among single users. The double-sided screens show energy related images accompanied by a techno ambient soundtrack and a poetic text read by Bill Seaman. They are played from DVDs. The interactive images on the central screen, which are accompanied by drones from a clarinet, are played from videodisks.

In the case study we looked for answers to the following questions:

1. Which aspects determine the authenticity of *Exchange Fields*?
2. What is the meaning of the original technical equipment for the work? May it be replaced?
3. Which are the parameters for the re-installation of the work?
4. How can the interactive properties of the work be catalogued?

An interview with Bill Seaman, the analysis of the contract of sale and of earlier presentations as well as additional research led to the conclusion that the authenticity of *Exchange Fields* is basically determined by the interactivity between moving images, interface sculptures and visitors. Additionally, the exhibition space, the projections and the arrangement of the interface sculptures play a decisive role. The appearance of technical equipment (players, computer, mixer...) is not important for the aesthetic of the work, because

the devices are not visible to the viewer. However, their properties (reaction time of the system, brightness of the projectors etc.) play a decisive role for the effect of the installation. The installation specifications and the minimum requirements for the exhibition space could be determined through a test re-installation of *Exchange Fields* at the *Museum Ostwall* Dortmund in 2009.

By documenting *Exchange Fields* and its interactivity the lack of a detailed documentation model for capturing the interactive properties of installations became evident. The elaboration of such a model is quite challenging. In the framework of the case study, a first step in this direction was made. Cooperation with a broader range of scholars would be desirable to accomplish this ambitious project.

P 14

The Digital Aesthetics of Climate Crisis

Convened by Søren Bro Pold (dk)
and The People Speak (gb)

- Søren Bro Pold (dk):
The Digital Aesthetics of Climate Crisis
- Lars Bo Løfgreen (dk):
A Project of Disjunction and Conjunction. On the
Aesthetics of Climate Change
- Morten Breinbjerg (dk):
From Representation to Action. How Art Addresses
Climate Change
- Jonas Fritsch (dk):
CO2nfeccion/CO2mmitment. Experimental Urban Media
in the Climate Change Debate
- Christian Ulrik Andersen, Søren Bro Pold (dk):
Participatory Pyramids: An interface for Climate Change?

Besides mediating science and politics, how is the climate crisis intrinsically related to the form and functioning of digital art, what are the criteria for evaluating and critically discussing climate art? This panel aims to discuss both epistemological issues and broader cultural, political issues in order to examine the particular contribution of digital art to the climate crisis. Relevant questions are how digital art can contribute to questions around how we hear, see, sense climate change, how we experience a post-crisis environment, and how we debate and act facing climate change? The format of the panel will be that of an 'Unpanel' which aims at engaging the audience directly. It will include strategies from the presented projects interjected as creative interruptions, glitches, crises and confessions. Thus the participants will experience the delicate balances and tipping points of both our climate and the role of art in relation to it.

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The Digital Aesthetics of Climate Crisis

During the last year (2009-2010) we have witnessed a big wave of interest in the climate crisis building up towards COP15 and quickly fading again after the failure to reach a binding agreement. Digital climate art was part of this wave, but is digital climate art only a politically correct, green-washing court jester, or does it have a more essential role to play? Does media reflexive digital art have a special role in the climate debate, and how can the climate crisis be articulated through digital art as an artistic and aesthetic problem? Is there a new genre of digital climate art, and if so, how can it be characterized and critically discussed?

Climate change is not only a difficult subject for making politics but also for making art. First, it is a very complex issue that goes deep into the roots of the concepts and dichotomies through which we normally understand reality, e.g. nature vs. culture, reality vs. representation, surroundings vs. technology. Second, there seems to be a difficulty in finding the criteria for evaluating and discussing digital climate art. The climate debate, meanwhile, has developed from being a scientific discussion in climate research to also being a political and cultural discussion, which opens the arena for art (Kovats & Munz, 2009; Witzke & Hede, 2009). I will suggest that the role of digital climate art is indeed to explore the new and prevalent complexities that climate change puts on the agenda along two lines, which may overlap and be inter-related in many existing art works: The epistemological and the political.

The epistemological has to do with the current changes of our environment due to technology either as unforeseen results (e.g. pollution, disruption of ecological balances) or as new ways to see, interpret and master nature (e.g. measuring global warming, CO₂). In this way the climate crisis is related to our developing interface culture. The climate crisis points to a contemporary crisis of representation we already know from computer interfaces and which is inherent to – and often articulated in – digital art. From this perspective the climate crisis is related to a techno-cultural development around digitization with slogans like ubiquitous, embedded and mobile computing. It is an epistemological problem related to how we perceive and interact (sic!) with the world through interfaces, which overlaps with the political: With the climate crisis we are trying to recognize and deal with something, which we

see some early signs of but will have to act upon before it is too late and the evidence becomes clear. We still mainly perceive climate change through mediation, as statistical forecasts, scientific models and visualizations, whereas when I look out my window it is still uncertain whether the weather I experience is related to the climate crisis. We cannot perceive the CO₂ level or its effects with our immediate senses, thus we have to turn to the interfaces of instruments, technology and science in order to recognize the extent of the crisis. As such, climate change introduces us to the fact that our immediate environment, the weather and climate, are becoming mediated, even in the deep country, when there are no computers or interfaces in sight!

This epistemological challenge is however crucial to critical digital art, which (especially in its media-reflexive periods from early computer art to net art, software art, hacktivism and locative media art) has revolved around exploring the hidden, invisible, unreadable processes and algorithms within software and reflecting upon the aesthetic, cultural, political dimensions of this. Digital art has often asked questions about the nature of the computer as an "instrumental medium" that combines electronic executive signals and interpretable signs at its interface (Nake, 2000; Pold, Forthcoming (2010)). Such a (political, critical, cultural) reflection is now of primary relevance for the climate crisis and for the way we experience climate change. On one hand, digital art might help 'educating' our perception towards a situation where it becomes vital for our survival to interpret and act upon mediated and highly complex signs; on the other hand, digital art might bring forth critical discussions on the computation and construction of mediated perception. We need to understand both the new post climate-crisis environment and how technology is part of this, and even plays a dubious double role – both as a necessary precondition for recognition and as part of the problem. Furthermore, we need to understand how to act politically in such a situation. How do we develop social, political and cultural forms that can discuss, negotiate and take action faced with the climate crisis where the best solutions might be complicated, unpopular, hypothetic, long and far-reaching beyond our own generation and our immediate fellow citizens?

As proved by the failures of COP15, these problems are still urgent and will not disappear even if we currently mainly deal with them by looking the other way. The epistemological and political challenges of the climate crisis are challenges for a digital climate art – a climate art 2.0, if you wish – without a yearning for unspoiled nature but realizing that we live in an interface culture where our relations to our surroundings (both natural and social) are inherently mediated and 'interfaced'.

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A Project of Disjunction and Conjunction

On the Aesthetics of Climate Change

A project of disjunction and conjunction – the aesthetics of climate change

In a way it is all a matter of aesthetics. In a way climate change is all a matter of sense perception. Whether talking about changes in the level of CO₂, variations or deviations in the Earth's orbit, mountain-building, continental drift or solar radiation, the question about what to do implies a clear understanding of what is happening. That question is a question of aesthetics, that question is a question for art.

But if climate change is a matter of and for aesthetics, then what kind of aesthetics? What sort of aesthetics does art use to either establish connections or destabilise already fixed notions of sense perception when we talk about climate change? Are we talking about an aesthetics of the sublime, such as the one that has been proposed by the historical and neo-avant-garde for decades through their experiments with effects of shock, alienation or acts of *detournement*, or are we talking about an aesthetics of the beautiful, of that which doesn't break with logical forms, notions of symmetry and delivers by providing the much needed constructed whole?

As proposed by Rancière, as part of his work on analysing the general distribution of the sensible in art and society, the question of which aesthetics becomes anything but simple and anything but innocent. It is a question about something more than just taste. If aesthetics can be seen as a foray into "the system of a priori forms determining what presents itself to sense experience" as a "delimitation of spaces and time [...] the visible and the invisible [...] that simultaneously determines the place and the stakes of politics as a form of experience" (Rancière 2004), then the interesting question here is, what kind of distribution of visibility and power is being foregrounded by the climate art of recent years. Without answering this question (in scale it would go well beyond the scope of this paper), I would however like to propose two possible readings of two quite different projects for dealing with the aesthetics of climate change.

Climate art as a project for an aesthetics of the sublime

Nuage Vert, a piece set up in Helsinki in 2008 by the French-German artist group HeHe, is a city scale light installation that projects green light onto the smoke emissions of a power plant – the ultimate symbol of both progress and pollution. In their own words the project aims to alert the public, generate discussions and "persuade people to change patterns of consumption"

Interesting is here not only how the installation in a simple gesture frames, points to and questions that which in the everyday life is otherwise considered insignificant and unnoticed in the urban public (i.e. smoke from a factory), but also, the strange relation between the real and the projected it produces. Instead of delivering a clear attack on pollution and emission by just highlighting what is otherwise unnoticed, it sets up an inverse relation: The more smoke, the less green light and vice versa. With this gesture Nuage Vert inserts itself into the project of emphasizing the gap between represented and representation. What you are confronted with when seeing the ominous, full blown projection of green light at its peak, is a level of CO₂ at its lowest possible level.

Climate art as a project for an aesthetics of the beautiful

“What is a climate artist?” asks the astrophysicist Roger Malina in his short article *Rethinking Art as Intimate Science: Climate Art as a Hard Humanity*, published as part of the *Rethink Climate* exhibition in Copenhagen in the fall of 2009. For one it is someone who is capable of navigating the rather complex and diverse discursive formation around the question of climate change. This discourse has no clear answers – scientific, political, economical and ethical perspectives on climate change doesn’t of and by themselves form a whole. This problem is caused by a disconnect of modern science and the broader public. In the words of Malina:

The projects of the Renaissance and the Scientific Revolution are incomplete. Scientific knowledge is not culturally appropriated. In many ways science has become a cargo cult. Many people use the cell phone for daily survival but could not explain the difference between a photon and an electron. One reason may be that common science does not make common sense. (Rethink 2009).

The problem at hand is here primarily that the highly specialized nature of scientific research where the reading of the data material provided by scientific instruments requires a familiarity unattainable by most people without the proper educational background. There is from this perspective a grave need for experiments with new forms of visibility, capable of mediating these data and thus providing the insight one would gain from hands on experience.

Two projects for art, two projects for climate art: The project of disjunction and the project of conjunction. The real question here is not which of the two is better suited for the task at hand, but rather how and in what way both projects can be combined? If ‘making visible’ sets the requirement of representation to fit the represented, then surely this ‘making visible’ can never be ‘new’ without also representing the expected in manners unexpected.

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From Representation to Action

How Art Addresses Climate
Change

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During the COP15 climate summit meeting in Copenhagen in December 2009, I was involved in the construction of a public art installation called “Atmosphere – the sound and sight of CO₂” that was placed in front of the city town hall.

Interfacing climate change

The installation converted data from CO₂ measurements at three chosen locations in Copenhagen to sound and visuals presented through headphones and on a 2-meter high, quadrant sculpture that functioned as a transparent, low resolution LED screen. Hereby the public was giving sensuous access to the symbolic villain of climate change i.e. carbon dioxide; and a normally non-sensuous phenomenon suddenly became visible and audible.

“Atmosphere – the sound and sight of CO₂” is intended as an interface that allows for new ways of recognizing and understanding environmental relations and issues of climate change. As in works of art like *Nuage Vert* by the Paris based art and design partnership HeHe, where the contour of clouds of vapour emitted from energy plants are illuminated by the help of green laser beams, allowing for a discussion and reflection on daily energy consumption or *Translator II*, Grower 2004-06 by Chicago based artist Sabrina Raaf, a robotic installation that draws vertical lines of green ink on gallery walls in response to the measured CO₂ variation in the air of the gallery, resulting very poetically in grass like images, *Atmosphere – the sound and sight of CO₂* involves an epistemological concern. As work of arts and as aesthetic interfaces the works mentioned hold a value in the sense that they present new representational forms that plays with the visual rhetoric of scientific imagery, and who as ambiguous, tentative and poetic expressions opens for other kinds of narratives than those told by images or interfaces based on values like truth, precision and exactness and hereby the idea of scientific facts.

Interfacing complexity

An important aspect of climate art works like the ones mentioned above is that they help us recognize the complexity of the subject matter on different levels. One level is the representational complexity that encompasses the relationship between measurement, representation and reality and hereby

the relationship between technology, perception and cognition. As science studies show, reality is interpreted and the scientific fact constructed already at the level of the technological equipment involved (Latour, 1979). The data resulting from the technological measurements is then on a second level phenomenological interpreted into sound and images confronting us with questions of how to stage the object e.g. in relation to scale. Dealing with visualizations of non-sensuous elements as in *Atmosphere* – the sound and sight of CO₂ or *Translator II*, Grower concerns on a basic level reflection on form and color, in short the semiotic encoding of reality, and the complexity of encoding is readable in the interface/imagery of the works.

On another level of complexity art works help us realise the ambiguity of the subject matter and its symbols. As claimed above CO₂ is the symbolic villain of climate change but through the process of photosynthesis CO₂ is also a crucial element of life. About this Sabrina Raaf poetically reminds us in her work. Also Nuage Vert expresses the ambiguity of environmental sustainability in that the work not only visualizes levels of gas emission in a purely abstract and isolated way, but also relates it to ways of living. Hereby Nuage Vert recognizes climate changes as a cultural problem and calls for cultural solutions, not only for technological ones.

On a third level climate art in its mixed forms of scientific and artistic rhetoric unmistakably shows, how we have moved beyond modernity. As Bruno Latour has described it, modernity was defined by a separation between facts and values each belonging to separate domains of culture. Today, as in the case of global climate change, the discourse of science, art, politics and ethics etc. are all entangled (Latour 2010). Instead of seeing this as a dystopian situation we have to find new discursive ways of dealing with the complexity and works of art that challenge the visual imagery of science, politics and commerce can play a significant role in this.

Interfacing action

As a final aspect we should remember that bringing about new ways of sonifying and visualizing environmental aspects of climate change is also a way of allowing for action. Not only politically or discursively but also physically. In order for us as citizens to act on climate change the problem (if not the solution to it) needs to be visible and: "Here art can assist in confronting us with new ways of seeing [...]" perhaps leading also to new ways of acting (Pold, 2009, p. 31).

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CO2nfession/CO2mmitment: Experimental Urban Media in the Climate Change Debate

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The advanced video installation CO2nfession/CO2mmitment is an example of the use of experimental urban media to facilitate participation, encourage reflexivity and foster engaging conversations about complex environmental issues such as the climate change debate. CO2nfession/CO2mmitment was part of a range of experiments with interactive urban installations to enhance civic communication conducted at the national research center, Digital Urban Living (DUL), at Aarhus University.

The installation was developed as part of the exhibition CO2030 in Aarhus. The exhibition was organized by the municipality as an opportunity for the citizens of Aarhus to get inspiration and good advice on how to decrease the emission of CO₂ on an individual level. As part of the exhibition, CO2nfession/CO2mmitment specifically aimed at putting a personal face on the climate change debate both in the exhibition space and throughout the city. The video setup encouraged and displayed the production of user-generated content and narratives in relation to climate change and environmental sustainability.

The installation itself consisted of two parts; one inside the exhibition space (Ridehuset), and the other on info stands and bus stops throughout the city. In Ridehuset, people could enter a booth, where it was possible to confess ones climate sins (using too much water or electricity, eating too much meat, driving too much etc.) and to commit oneself to a more active fight for a better climate in Aarhus. In the booth, a number of props were placed to help inspire the climate story people wanted to tell or perform. A video was recorded of the persons in the booth shown as a live-feed outside the booth to attract bystanders. The video was edited the same day and distributed on the screens in the city where people could hear the sound of the videos by touching a sensor on the screens. During the exhibition, 68 recordings were made and distributed across the city. Located in busy city locations, these screens showed edited versions of the videos 24/7 for four days.

A wide range of people used the installation, from people just visiting the exhibition who found a good opportunity to get something off their chest to



Fig. 1: By voicing their opinion in the confessional booth, people were able to put a personal face on the climate debate throughout the city of Aarhus.

the local city Mayor. The videos recorded were extremely diverse ranging from straightforward and simple confessions to complex animated narratives with props used in creative ways. Concerning the screens in the city, a number of people remarked their existence. Stories of people going to a certain screen to see themselves were reported, but also stories of people suddenly seeing some of their friends appearing on the video screens to their surprise. As such it can be argued that the infrastructure had the potential to change people's expectations to a traditionally somewhat commercialized use of urban screens in the city and to create new affective ties to the climate debate. In general, although the screens created a lot of attention in the city it nonetheless proved to be difficult to attract people to actively engage with the content of the videos.

While some felt that the personal exposure in CO2nfeſſion/CO2mmittment was warranted, or indeed needed, due to the urgency of the theme, others perceived the communicational setup as too intrusive. Interestingly, a lot of the people who did not enter the booth did, however, take the time to discuss with the operator of the booth why they did not want to go into the booth, and what they would have said, had they entered. In this way, the installation fostered discussions relevant for the topic that were not recorded by the system.

CO2nfession/CO2mmitment simultaneously tried to render the climate debate personal and immediately relevant in the Aarhus cityscape and attract people to Ridehuset for the exhibition. It is interesting to look at the ways in which people actively appropriated and made sense of CO2nfession/CO2mmitment in multiple, unforeseen ways. The openness of the installation proved to be an asset in engaging people creatively in playful modes of content-production. It remains a question to what degree and how one should balance between controlled and open interactions in an urban environment. Nonetheless, our prior experience and the findings from this case study indicate that the openness of the system is an asset that can be actively pursued in the design. Another question concerns the impact of the installation on concrete climate improvements, which is far more elusive to measure. It seems, however, that the conceptual underpinnings and urban distribution of CO2nfession/CO2mmitment did help capacitate and engage a number of people personally in conversations about a better climate through urban interactions and performances.

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Participatory Pyramids – An Interface for Climate Change?

Climate as a Thing

Working with the politics and debate on climate change, you quickly realize that it is not merely a scientific fact but a complex issue that calls for a paradigmatic change affecting both how we understand our surroundings and how we deal with them socially, culturally and politically. Bruno Latour makes a distinction between objects and Things, where the latter contain both the object out there and “an issue very much in there” (Latour 2004, p. 233). Suggesting ‘Thing’ as a concept, he highlights a dialogical aspect of things where the scientific viewpoint concerned with facts, at a distance of the observed world, has come to an end. As Latour points out, the word Thing is etymologically related to the Germanic and Scandinavian “tinge” meaning both a thing and an assembly.

Latour’s argument is complicated but usefully points to the complexity we find around the climate change debate. Climate changes and observations are not (yet) facts, and we need to deal with them as ‘matters of concern’ before they become ‘matters of facts.’ Things, like the UN COP-conferences need to be gathered in order to establish the climate crisis as a ‘matter of concern.’ At and around a COP-conference Things take place; facts and objects enter the Thing, and are gathered, interpreted and debated – as scientific observations (e.g., global warming), personal observations of nature (e.g., drought), cultural frameworks about how we regard nature or political/economical constructions (e.g., the carbon cap and trade bill).

The astrophysicist Roger Malina points to the need for a digital climate art that can deal with the distance between science, technology and our every-

day world experience by opening up the scientific labs (Malina 2009, p. 99). However, besides opening the labs, we need to open the political structures, the Things for new forms of debate and understanding. After all, the traditional Things of COP15 did not succeed, and the current fading interest in – or even acknowledgement of – the climate changes emphasize that it is still difficult for many people to relate to the crisis. There is a need for artistic interference with the highly complex techno-cultural construction of the climate debate itself; an exploration of climate crisis as a Thing. Climate change is not a problem easily solved and requires not only technical innovations and political courage but also changes in our values, desires and consumer culture. Art has the potential for creating meaning formation, public debate and not least meta-reflection on the whole process; a meta-reflection needed to create paradigmatic changes in our way of organising, handling and understanding our global environment.

Planetary Pledge Pyramid (PPP)

In the period leading up to COP15 in Copenhagen, Dec 2009, we, together with the British artist collective The People Speak (THEPS), aimed to construct a worldwide Thing for conversation and action on the climate crisis. The idea was to make a pyramid scheme generating ideas, debate and the finances to carry out the aspirations of the people. However, during COP15, as the failure became evident, PPP also turned into an alternative Thing and a critical reflection on COP15.

In order to find the forms of representation that could lead to the development of future Things, we believe it is necessary to explore formats people are familiar with; popular formats that people actually use in daily life to represent and recognize themselves – such as talkshows, gameshows and Facebook.

PPP in reality consisted of three different Things, loosely tied together. 1) THEPS' people-led talkshow Talkaoke set up on the City Hall Square in Copenhagen (Rådhuspladsen). 2) A Facebook application disseminating PPP, encouraging people to pledge money and bring forward planet-saving ideas. 3) THEPS' gameshow Who Wants to Be...? in an 'end-of-the-world' edition where the participants debated and chose the final planet-saving idea to back with the money generated by the scheme.

Representing the Masses

We estimate that around 2500 people were involved directly in PPP – staggering, but far from world encompassing. However, merely assessing by the number of participants misses the point, as our aim was not primarily to amass people, but also to give them the opportunity to reflect on their power and how Things should be constructed for the climate crisis.

With reference to Walter Benjamin, the crucial question is whether the people are merely given a structure to express themselves or if they are actually given their right to also change the structures (Benjamin 1985, p. 241). The issue is not just how many people support a cause in Facebook but

whether it provides an opportunity to reflect their own position and negotiate their power as a networked mass ornament (cf.: Kracauer 1977): How do we create a form of representation that entails the right to critically reflect and change its structure.

In our project this means the right to negotiate hierarchies of meaning, control and action. In other words, what is interesting is how the elements in PPP work as Things where people can relate 'facts' to personal experiences, belief, lifestyle, etc. and find their own voice in the climate debate. Ultimately, this was combined with a reflection on the Thing itself, on the failures of COP15 and on which kinds of alternative Things are needed.

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P 15

Expanded Visual Spaces

■ **Roderick Coover (us):**
The Digital Panorama in Cultural Representation

■ **Chris Bowman (au):**
Explorations of Visual Representation: Towards a Language
of Movement

■ **Louis-Philippe Demers (ca/sg), Armin Purkrabek (de/sg), Philip Schulz (de/sg):**
Embedded Scenography in Interactive Public Art

■ **Pierre Proske (au):**
Frame Seductions

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The Digital Panorama in Cultural Representation

This paper considers how uses of scrolling and panoramic interface in interactive filmmaking can integrate visual research and cultural representation in ways that draw viewers into the media arts/scholar's process. The technique I have been developing in the use of panorama is found in *Cultures In Webs* (2003), *Something That Happened Only Once* (2007), *Outside/Inside* (2007) and *Voyage Into The Unknown* (2008), and in my latest project, *CANYON-LANDS: Edward Abbey In The Great American Desert*.

In *Another Way of Telling* (1982), in which John Berger and Jean Mohr develop text-image works that are part exposition, part narrative, and part poetic evocation, Berger describes the kind of viewership or image-reading that using photographs in sequences provides:

Eisenstein once spoke of "a montage of attractions." By this he meant that what precedes the film-cut should attract what follows it, and vice versa... In a sequence of still photographs, however, the energy of attraction either side of a cut does remain equal, two-way and mutual.... The sequence has become a field of co-existence like the field of memory. (162)

A scrolling digital interface similarly allows for multidirectional movement, while adding more diverse media elements and enabling user agency. The user navigates an environment that extends beyond the limits of a printed page. By making her own choices in navigating a multimedia work, the user also becomes more aware of the choice-making processes of the original maker(s) of the work.

Canyonlands offers users means to follow how arguments are built out of experiences and they explore some of the ways arguments may be constructed with poetry and imagery as well as through exposition. The spatial structure allows users to follow Abbey's texts as he responds to

events unfolding around him. And, it allows users to follow the mediamaker's choices. Users may follow a primary path that presents selections of materials in ways one might experience in watching a documentary film. However, the structure offers something that the linear documentary cannot: choice-making. As opposed to the inclusion of supporting materials in the common DVD, this choice-making is fully integrated in the viewing experience allowing individuals flexibility in choosing to expand or limit narrative, expository and poetic approaches to a work's primary topic and its off-shoots. Being implicated in a choicemaking process, the user engages both in an analysis of the mediamaker's path-making decisions and in self-analysis: what is learned by the choices that the user made in alternatively navigating the materials included in the environment, and toward what new questions do these paths lead?

Choice-making is one quality that once drew me to traditions of direct cinema and ethnographic cinema. There are many documentary films that are tightly scripted before shooting starts; the camera commits to image a preconceived text. However, in both direct cinema and much of ethnographic filmmaking, the researcher-maker has little control over what is happening and must make choices in filming and other data collection that might aid in the later interpretation of what is unfolding. Meanwhile the format does something more than those film traditions – I find thinking of the interface as a terrain of my media clips and other data to be a very exciting production environment that helps me to organize and create projects in ways I would not have done before, and at the same time, they open up the filmmaking process to others by essentially bringing the bins and timelines of the editor's suite into an interface. Users can see how an argument is built out of a set of resources.

Like Certeau's "walking in the streets," participation with cultures from the ground up – something that ethnographers frequently take pride in – requires continual adaptation, additions of new information, interpretation, and translation. Interactive environments offer researchers tools to gather materials and build interpretations through sifting, sorting and path-making. The production is also its presentation. The tools sustain a critical working practice that becomes part of the history of a work.

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Explorations of Visual Representation: Towards a Language of Movement

Introduction

Since the invention of cinematography experimental cinema has undergone continual advances in both technology, aesthetics, and content. With the development of digital interactive technologies, these conventions are being challenged and reshaped. This paper examines the graphic representation of abstract interactive cinematic elements that seek to explore movement, time and space and build upon the graphic tools film-makers used in the early 20th century to express these elements and affect the cinematic language of movement into the 21st century.

Early pioneers of experimental film, such as Eggeling, Richter, Ruttmann explored a metaphorical and symbolic visual language of abstraction that defined spatial dynamics and temporal layering of movement, time and space (Le Grice 1979). These early explorations into the language of movement were conceptualised through unique systems of graphic representation that combined signs and symbols. They explored abstraction in the moving image through an "equivalence of opposites" (Richter 1952) analogous with musical and dance notation resulting in a fluid abstraction of geometric, organic and anthropomorphic forms. Later we see expansion of these considerations by Eisenstein in his seminal work on montage.

These and other early filmmakers worked within the technical constraints of 2D and 3D representation available at that time. Today, digital technology provides film-makers greater flexibility to determine the cinematic modalities of the aesthetic, narrative structures and forms of interactive engagement. This is evidenced through the rich spectrum of experimental interactive cinematic artworks that has emerged in the late 20th century. Digital technology has also provided new ways of making schematic representations of move-

ment, time and space used in the visualisation of interactive cinema content that move beyond the platonic notion of form and statics (Hatzellis 2005) such as flow charts and other forms of graphic mapping.

The author proposes that in the context of the newly emerging paradigms for experimental interactive cinema (Manovich 2006) there is an increasing need for artists to extend their understanding of these complex modalities and move towards the development of a new language of movement as exemplified by the early pioneers of experimental film.

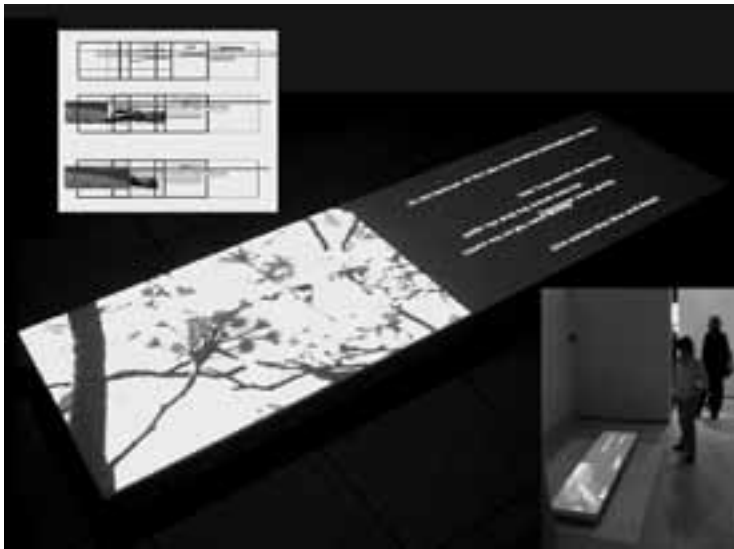


Fig. 1: Spring and Asura 2009

New paradigms in graphic representation

Spring and Asura .01 and .02 – Disturbance (2008/2009) is an interactive cinematic artwork in development since 2006 (Fig. 1). It was recently exhibited as a single channel dual screen projection installation. The work explores the relationship between video images of the natural world and Miyazawa's poem 'Spring and Asura.' The work is further explored through the movement of visitors within the space and the recitation the Heart Sutra. Using a combination of image and motion capture technology the artwork explores the movement of light and shade within the video recordings and movement of the visitor in the space. This self-generating interconnected system creates an ordering and re-ordering of the image/text resulting in shifts in time, movement and abstraction through the viewing of the work.

The development of this artwork was partly informed by Eggeling, Ruttmann and Eisenstein. The author found their explorations into a visual language of movement analogous with the nature of abstraction and representation in S&A. The author further drew from seminal thinkers such as Bergson, Deleuze and Serres for their concepts of space, time, move-

ment, and Maturana and Luhmann for the interconnecting self-ordering and organic systems associated with autopoiesis. (Chagas 2005) Together, these theorists provided the author greater understanding of the fluid and evolving, simultaneity and co-dependency of interactive narrative structures and modes of engagement that may be extended through one or more 'planes of immanence' (Deleuze 1986).

From 2005 to the present the author invested these ideas into schematic visualisations for S&A. These schematic models propose to reframe the vertical and horizontal axis (Deleuze's classification of the Movement Image) and adapt them as a way of structuring three modalities of abstract cinematic content and interactive engagement. These will be graphically arranged as open/closed 'contractive' and 'expansive' structures through the synthesis of software, technology, and the environment in which the artwork exists.

A key feature of this schematic model is its organic nature. It is flexible enough to account for the formal complexity and simultaneity of the narrative, aesthetics, software and interactive engagement. The author's next iteration of the model will be made more operable using 3D animation and modelling software to enable greater flexibility in order to define spatial dynamics and temporal layering of movement, time and space for a given artwork. In so doing, achieve a rapid prototyping tool that allows the author to control and explore the planes of immanence and narrative structures through iterative image processing. Through this new animated schematic the modalities of space, time and movement explored through the early pioneers will continue to advance our understanding and the development of experimental interactive cinema today and a new language of movement will emerge.

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Embedded Scenography in Interactive Public Art

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Abstract

This research investigates the intrinsic role of scenography as an integral part of large-scale multi-user and multi-touch environments.

Introduction

While Tangible Media started to break the grounds for the role of proprioception and affordance in interactive environments, large-scale interactive works and participative public art bring additional requirements towards the design of such interfaces.

The authors have developed a series of related artworks that integrates the scenographical and architectural setting in the definition, comprehension and operation of the interface. By further analyzing these works, the aim is to address the following questions:

- How can the scenographical and architectural settings provide affordances, i.e., from their impact on the body in space to their cultural icon?
- Can the proprioception (hand-eye) be extended beyond the body scale in a large (or distant) environment?
- What are the roles of the human visual field in understanding an interactive system especially in larger than body environments?

This research has derived works that shift the visual perception in different architectural settings and body-eye coordination's:

- an interactive floor (looking down, foot-eye)
- a multi-touch table (looking near, hand-eye)
- an interactive wall (looking horizontal, body-eye)
- an interactive building façade (looking far, disembodied).

The Prayer Drums

The visitors are invited to spin a large-scale array of virtual drums (as an analogy of Prayer's Drums in temples). The array is laid out on a wall. Each spinning of the drums triggers a soundscape that reacts accordingly to its velocity. The visual representations of the drums are abstract and act as a visualization of the soundscape.

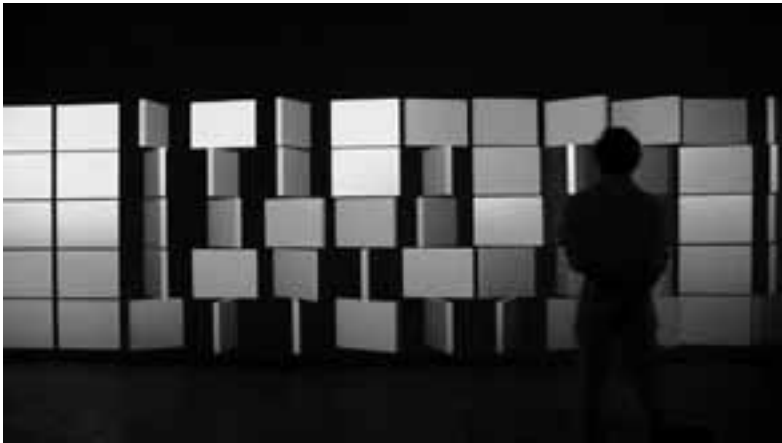


Fig. 1: The Prayer Drums

The Wind Tunnel

The Tunnel is a long corridor where airport passengers in transit can experience the simulated turbulences of aeronautical test chambers. The corridor length is of an arbitrary dimension where the longest span would give the outmost vanishing point. The Tunnel could namely be deployed in parallel to



Fig. 2: The Wind Tunnel

moving escalators and in long transit spaces. The sensing surface is retrofitted into the floor (using proprietary multi-touch ruggedized capacitive matrix) while the visuals are displayed from the top via an array of video projectors.

The Beat Table

This multi-touch surface incarnates the archetype of the electronic beat box sequencers. Rendering 3D volumes on the table depicts the beat steps and sound volumes of each sample triggers. The system provides multiple pre-sets in order to create coherent musical arrangements.



Fig. 3: The Beat Table



Fig. 4: Building Media Façade Prototype

Interactive Media Façade

As a proposal for an interactive video building façade, a tangible small-scale reproduction (model) was constructed to engage interaction from the people on the street. The audience could manipulate and morph real-time video feeds by “touching” the building and by witnessing their “influence” on a distant large-scale screen.

Future works

The different works were developed independently empowering the scenographical setting for each artwork context. The next step in the evaluation is to shift the works from one scenographical scheme to the other. By doing this, the research will further investigate the impact of the proprioception versus the scenographical environments.

Acknowledgements

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Frame Seductions

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Synopsis

Frame Seductions is an interactive work that plays with our expectations of the video frame by creating an immersive and surreal space that lies beyond the traditional borders of the screen.

The project explores the concept of looking outside of the video frame by tracking the head movements of people immediately in front of a camera-enabled screen. As people turn their head to the left or to the right the perspective of the video on the screen will change to follow their gaze.

In the language of cinema, *hors champ* (out of scene) is considered to be the space and time of the filmic world outside of the range of the camera. Viewers of Frame Seductions are able to access material outside of the initial scene, blurring the boundaries between the frame and the *hors champ*. Lurking in the sidelines of the original scene, various mundane but provocative scenarios are playing themselves out much to the surprise of the viewer.

Description

In the 21st century the concept of the frame persists in incarnations both old and new in painting, video, television, and cinema. Today, in the face of a steadily growing plethora of screens, projections and LCD's the content of the frame has the ability not only to animate but through technological contrivance to also respond to our movements and gaze.

This project is exhibited as a video depiction of several ordinary scenes in the tradition of genre painting. Genre painting or photography depicts aspects of everyday life by portraying ordinary people engaged in common activities. In Frame Seductions however the actions of the people in the scene are often mysterious or nonsensical, creating a slightly surreal, magic-realist atmosphere. Characters appear in several places at once, exit through doors to only reappear elsewhere and are often seen giving the viewer or each other quizzical looks.

The installation plays back panoramic video, of a width much larger than the screen frame itself. The screen acts as a window into this larger panorama, and the head movements of a person just in front of the screen

causes the focus of the viewing window to shift either to the left or to the right, exposing new material.

The installation appears as a static looking picture from a distance, however as people approach closer they are given the opportunity to peer into the sidelines of the image revealing dynamic 'hidden' scenes. In addition, the 'side-lines' play sound, whereas the central image is relatively silent, teasing people into looking out of the central frame in order to locate the source of the noises.



Fig. 1: Photo: Vera Batowska

Video material for the screen was shot using actors, using multiple camera perspectives to achieve a panoramic effect and then processed by software. At any one time the panorama consists of three videos played back side by side asynchronously. Each video is looped seamlessly, occasionally swapping out when not visible to be replaced by new content. The algorithm controlling the selection of the videos takes into account the content of the videos and the perspective of the viewer, i.e. which part of the scene they are currently watching. Tracking of the viewer's head is achieved using proprietary 6-degrees-of-freedom head-tracking software.

Themes & Inspiration

The Frame Seductions video was shot in the abandoned floor of a building in Lima, Peru. Both local and foreign actors of both sexes were used in the shoot. Various surreal and mundane activities take place in this space. The overall aim of the piece is to play with people's expectations, generate surprise and wonderment and create a sense of immersion.

Shooting of the footage of Frame Seductions was inspired by a couple of earlier films, namely Zbigniew Rybczynski's animation *Tango* (1982) and a scene in Jean Luc Godard's film "*Les Carabiniers*". In *Tango*, Rybczynski

exploits this concept of the single off-screen space by filling it with a plethora of actions. It soon becomes obvious that such a small space, that of a small room, could not possibly contain all the actions taking place. Rybczynski also makes critical use of off-screen space, exposing it for the artifice it is. Off-screen space is the imaginary area beyond the edge of the screen, and in front of or behind the camera. Jean Luc Godard's film "Les Carabiniers" has a scene in which one of the lead characters Michel-Ange discovers the cinema for the first time. Michel-Ange approaches the canvas on which the film is being projected and attempts to peer into various parts of the projected scene in order to better appreciate the projection of a naked woman taking a bath. Not knowing the difference between cinema and real-life, he eventually stumbles into the cinema screen hoping he can enter the bathroom in the projection.

P 16

Artistsinlabs: Networking in the Margins of Eco-Activism

Convened and moderated
by Jill Scott (au/ch)

- Angelika Hilbeck (de/ch):
Environmental Scientist. The GMO Debate and
Documentary Media
- Andrea Polli (us):
Media Artist. Community Weather Stations
and Environmental Knowing
- Juanita Schläpfer-Miller (ch):
New Correlations. Art/Science Approaches to
the Energy Crisis!

This panel blurs the boundaries between artistic and scientific re-
search. While artists have become more involved in ethical and social
debates about scientific discovery, scientists have been exposed to
the processes and contexts of art. Thus, networking tends to expand
the borders of the exact sciences and to cause a more robust level of
dialogue from the humanities and the arts.

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Networking in the Margins of Eco-Activism

The following is a co-authored paper about *Networking in the Margins of Eco-Activism* for the panel in ISEA of the same name. The speakers will show that a responsible attitude towards the definition of nature can be embodied within the margins of art and science. Networking between eco-activists from both fields also tends to create a more robust level of know-how transfer about the environment. The authors in this text will expand on the idea that both fields of art and science can no longer deny the state of the very world in which it exists.

Artists who “care” about ecology are interested in the social impacts of their roles in society and how scientific discovery can shed light on their opinions or reinforce their inspirations. Not only are these artists becoming more involved in the ethical and social debates generated by scientific discovery, scientists have also begun to question their own career stereotypes and scrutinize the ethical boundaries of commercialism. Furthermore, each discipline’s respective commercial industry tends to monopolize discoveries and attempt to control of the results. It is time for the public with its growing literacy to demand a de-marginalization from science as well as from art.

In the 60s during the Vietnam War, it was not very hard to neither drag artists out of their studios onto the streets nor find them in the role of “political story-teller” for the public. These artists still fondly talk about the responsibility to engage with the public and how this focus drew them together as an art community. Today, there are a number of reasons why the re-sharing of the

controversies about the environment with scientists might be beneficial. As we will indicate, the task to change is vast and challenging, but without new trans-disciplinary and community discourses about the nature and nurture debate, perceptions of realities cannot be shifted.



Fig. 1: Domino Effect Photo: Angelika Hilbeck

Ecologist, **Angelika Hilbeck** is interested in the role of the environmental scientist in the future. Within the last decade, she has questioned her own career stereotype and scrutinized the environmental boundaries of commercialism and the monopoly of her own discoveries by larger stakeholders. Her focus in the context of ISEA is about how public access to the Genetically Modified Food (GMO) debate is helped by the genre of documentary film.

“Modern times are characterized by disconnections in uncountable shades and shapes based on the mechanistic perception of the world to be “functioning as machine”. While this has generated huge technological progress driven by the singular goal – profits – the global ecosystem now must respond to the totality of all anthropogenic impacts and introduced technologies. Today, this is manifested by the simultaneous decline of essentially all fundamental systems human societies are resting upon, e.g. climate, biodiversity, resources, economy, and food production. A giant self-reinforcing system has emerged over the past decades that, for the sake of profits, has increasingly caused people to be disconnected from their environment, the production of their food and their own bodies. These current decoupled systems also prove to be unable to remediate themselves even with the fact that the collective demise is in sight. Therefore, novel approaches and concepts for remediation must be conceived and implemented as fast as possible. The arts have a prominent – if not key – role to play in this state of emergency! The arts may be one of the last fields of practice left with a large degree of freedom to alarm, reveal, rebel, conceive, demand, provoke, promote and more. This freedom can be described by using examples from documentary film – a genre that has gained breath-taking popularity over

the past decade, just as the collapse of the decoupled systems began to manifest itself. The debate around GMOs and the restructuring of science to serve industrial interests can be illustrated through these films, proving that this attitude has led to a totalitarian system of secrecy and control. Documentary films have taken on an increasingly important role in revealing the disconnections and the loss of the human dimension by portraying the profiteers and losers of this system and comparing their comments."

In the post-modern art school education of the 60s and 70s, we were often taught that nature is a socially constructed idea, a scenario that now may or may not provide us with a considerable hope to re-build a sustainable future. We also learnt that the marketing of nature impinges on all factors of social reality and tends to construct nature as one that contains a certain set of human ideals and our relational place inside them. The general public also tends to treat the environment as "a given situation" and so an issue like climate change can shake their very perception of "the real". Art researcher and artist, Amy Lipton once coined the term "ecovention" by constructing it from "eco" and "invention", labelling it as strategy that artists can use to transform ecologies. But this definition also incorporates art projects that employ an inventive strategy to physically restore local ecologies on a very real landscape (Lipton, 2002) [1].



Fig. 2: WeatherStation Zurich
Photo: Andrea Polli

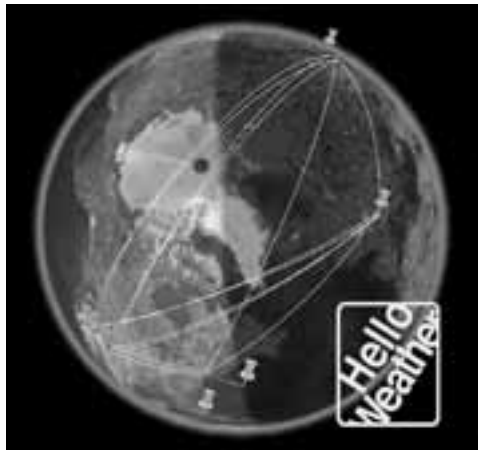


Fig. 3: WeatherStation network Photo: Andrea Polli

In this light **Andrea Polli** has focused her artistic work on interpretations about the collective potentials of the scientists to measure and model climate change. *"Weather and climate requires a joint venture of measuring and modelling by using information technologies. However, what are some of the current cultural understandings of weather and climate and how have physical and computational models affected these understandings? Are there structural aspects of computing (especially networked computing)*

*that inform weather and climate understandings? From simple instrumentation and physical models to satellite remote sensing, sophisticated computer models and counter mapping provide a historical basis for this research. By allowing the public to engage in environmental measuring and monitoring projects can provide a direct alternative to information available through official government and mass media sources. Such projects have created alternative pathways to understanding environmental issues. These projects have also acted as a driver or catalyst for changes in cultural or social practices.” Polli’s own community weather station network, *Hello, Weather!* [2] has been located at sites in New York, Los Angeles, Zurich and New Delhi. Public access to the weather has a long history, as Polli has explained:*

“The first systematic weather observations in the American Colonies were taken by Lutheran Minister John Campanius Holm in 1644, and by the American Revolution, serious weather observation was a widespread practice of the elite including major political figures George Washington, Thomas Jefferson, and Benjamin Franklin. But despite the popularity of the practice among several early political leaders in the states, Ben Franklin was the first to publicly connect volunteer weather observation with the developing political and social theories of the new republic and with the growing myth of the American entrepreneurial spirit. He connected his political philosophy of the common good with the publication of atmospheric data paving the way for future developments in information sharing. This Almanack included weather data and he himself operated weather stations over time, weather data was most certainly a part of what he believed should be freely and generously shared.” This access to information and generation for common sharing is an important aspect to consider when exploring the expanding role of today’s “ecomedia” artists.

The research of artist and scientific communicator, **Juanita Schläpfer-Miller**, is also concerned with transdisciplinary measuring systems for the value of bio-diversity and human culture on common grounds. In this case: common land. Using agrofuels as a prime example she writes:

“A research project involving media artists and agro-biologists, could examine the questions raised by the sharp increase in the production of agrofuels, as a means to mitigate climate change. The CO₂ emissions caused by the burning of fossil fuels and the prospect of reaching peak oil production has led governments to mandate the introduction of bio or agrofuels. There is already evidence that these fuels bring their own set of problems, such as food crops being used for fuel and marginal land being planted with mono-crops, which create local eco-system imbalances. Despite many experts voicing concern that agrofuels are not long-term solutions, vast tracts of arid and so-called wasteland in India, China, and Tanzania, for example, are being planted with crops such as oil palm and jatropha. This introduction of green technologies raises a host of questions: Who defines what wasteland is? What or how do we value common land? Who and what gets sacrificed for the “common good”? Can we determine a scale to value biodiversity or human culture? By applying the law of energy conservation, this project



Fig. 4: Tanzania Photo: Juanita Schläpfer-Miller

*compares the energy balance of using a 10 Hectare “wasteland/woodland” site in Tanzania for growing agrofuels versus maintaining it as “Village Land”. While villagers apparently make low-intensive use of such land, it may be an important source of sporadic grazing, medicine, fuel, and gathered food; moreover, it may also be of spiritual and cultural significance to the indigenous people concerned. Central to this research is the idea of providing villagers with the opportunity to document their own lives and how they use and value their land. In Tanzania, there is 80% illiteracy rate, therefore it is important to develop audio-visual tools for non-literate populations and documentation skills to give communities their own voice. While attempting to lessen CO₂ emissions, agrofuels are being introduced under the existing paradigm, including mono-cropping and liquid fuel distribution. Many artists and activists have argued for a paradigm shift. Media projects by Platform London called *Burning Capital* [3] and *Unravelling the carbon web* [4] are commendable illustrations of this shift. Another example could include the potentials of bio-gas such as the group, *Superflex* [5] who has developed a portable biogas system or Amy Balkin who has devised eco-actions for the reduction of CO₂ emissions” [6].*

Thus as Juanita, Angelika and Andrea suggest, art and media can contribute, even in small interdependent local ways, not only to the raising of awareness about the environment, but perhaps even offer some unique solutions. In relation to the scale of such an enormous problem such as climate change, each one of the above authors have chosen to focus on interdependent parts of the problem, food, weather monitoring and local culture. This strategy is perhaps the only responsible tactic to take, given that many small incremental steps can create a unity of strength. Organizations like the Green Museum.org [7], know this and their collections of artists working on “nature” is truly remarkable. But as French theorist Bruno Latour

[8] suggested the danger is that we are blundering and rolling into the future of technological progress, without a glance backwards in order to be critically reflective. He recommends that we drop out of the ideology of technical progress, which is "like a state of fumbling in the dark," and instead talk about teams for a new trans-disciplinary "composition" in the future. Such a trajectory may also help modern culture with its divided mainstream and grass roots histories to be rethought! The group that constitute this panel, share an interest in moving beyond the boundaries of the "me" generation and the post-modern dilemma, into a role where art and media can shed light on more controversial issues and become a larger part of every day life. Perhaps when artist and scientists join forces, they can be creative and reflective enough to filter, process and tackle the ecological issues of social and ethical responsibility with paradox, irony and satire for the general public. Nature it seems is still being assembled and reduced through decay but can she still wait so patiently to be better understood and reintegrated back into our lives?

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- [3] <http://www.carbonweb.org/burning/capital/>
- [4] <http://www.carbonweb.org/>
- [5] <http://www.superflex.net/tools/supergas/>
- [6] <http://www.publicsmog.org/>
- [7] <http://www.greenmuseum-org/>
- [8] Extracted from a recent interview by Jill Scott, with Bruno Latour during the conference at the Swiss Museum of Transport, Lucern 2010 entitled, The Large, the Small and the Human Mind, Swiss Biennial on Science, Technics + Aesthetics. http://www.neugalu.ch/e_bienn_2010.html

P17

Media Politics of the Local

- James Wallbank (gb):
Life on the Trailing Edge. Ten Years Exploring Trash Technology
- Yara Guasque (br):
■ Some Initiatives in Pervasive Games in the State
of Santa Catarina
- Leandro Pisano (it):
Exploring Rural Territory as a New Medium
- Ricardo Peach (au):
'Proticipation': The Australia Council and Social Media Arts
in Virtual Worlds

Life on the Trailing Edge

Ten Years Exploring Trash Technology

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At ISEA98 I proposed that artists should engage with recycled, “trailing edge” technology combined with free, open source software as an antidote to the commercialism and exclusivity of digital media. The project that emerged from that proposal, Access Space, has proven to be a robust model for public engagement with networked digital media and has influenced numerous local initiatives. It is now the longest running open access media lab in the UK.

In 1998 open source was seen as marginal. Now the cultural significance of the free software movement is recognised and proprietary software and formats have become marginal for many artists, activists and commentators. Yet proprietary formats, software and practices (which provide convenience at the expense of autonomy) still dominate the mainstream and some artists remain uncritical digital cheerleaders.

Digital technologies tend to manifest as a centralising force: concentrating knowledge, power, skill, information, money, opportunities, resources, and (with the advent of social networking) even friends. If digital media artists only engage at the level, “Hey, this is cool!” they fail to challenge the figuratively toxic social and literally toxic physical effects of an industry which both creates and accelerates the premature redundancy of the tools of their trade.

Art has practical significance. Artistic creation has been a key factor in the success of Access Space’s technology recycling (more precisely re-use). Making art with trash technology inspires computer donations, attracts participants and volunteers, focuses enthusiasm. While others use reasoned ecological, economic and utilitarian narratives to encourage recycling, Access Space attracts a continuing stream of ever more powerful computers simply by showcasing their creative potential.

Creativity transforms value. Defining a four-year-old computer as “obsolete” does not speak to the utility of the object (it’s still a powerful production and communications platform) but indicates its user’s unwillingness or inability to continue to be creative with it. “Trash” is what we call stuff we can’t be bothered with. Our ecosystems are suffering not from an excess of consumption but from deficits of creativity and knowhow.

Artists engaging with technology must better understand their capacity to lead society into a less consumerist, more sustainable, collaborative and

personally empowering mode, in which technology serves to decentralise and distribute positive value, not to concentrate it at choke-points in supply and communication.

Free, open source licenses are key mechanisms to ensure that software distributes knowledge, skill and opportunity. Could Access Space show us something of what a wider “open source culture” might look like?

Access Space operates on a simple principle: anyone who walks in can take part and pursue their own creative projects. These may (or may not) engage with the open access media lab, web hosting, trash computers and peripherals, exhibition space or the social and micro-business networks around the project. The only requirement is a focus, and the only cost is a willingness to share inspiration, ideas and knowledge.

Each project remains entirely the property of its originator – it’s their idea and their autonomous domain. Participants’ enthusiasm to acquire the resources, contacts and knowhow necessary to progress their idea drives their interactions with the rest of the community. Questions inform and empower the questioned, as well as the questioner. Everyone brings useful resource to Access Space – even if those resources are in the form of problems to be solved.

What grows out of this apparently absurd, utopian giveaway is a network of peer learning and growth which forms a sustainable learning community. It diverges significantly from conventional models of learning.

- The capacity of a peer-learning network to deliver skills increases with demand. Like bit-torrent, people give as much (or more) than they demand. (In “top down” learning, more students require more tutors.)
- Learning is appropriate for the level, context and practical demands of each participant. (Institutions work on a “We know what you need to know” basis.)
- Incidental or off-topic learning becomes significant. (Unlike the academy, Access Space’s diverse community is poor at producing narrowly specialised experts unaware of different skill sets, value systems and perspectives.)
- Engagement is not a problem. (Access Space works with what already engages people, challenging them to take it to the next level.)
- There’s no glass ceiling. (Participants can engage at a level above the expertise of the organisation.)

It’s clear that this DIY way of working is effective, low cost and sustainable. Rather than importing expensive resource (new computers, expert professionals, new software) Access Space mobilises local technological and human resources already present or readily available at no cost.

Access Space has been identified with global networks of similar practice (such as the Bricolabs network) and huge progress in engaging with these ideas has been made in emerging nations, particularly Brazil. In contrast developed market economies may be ill-placed to ride this next wave of digital creativity (in which “old” is the new “new”) unless they fundamentally re-appraise their understanding of “value”.

Some Initiatives in Pervasive Games in the State of Santa Catarina

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Focusing on pervasive games, we compare the performative actions of three groups.

Influenced by Allan Kaprow's Happenings and by Augusto Boal's Invisible Theater, *Grupo ERRO* follows the line of performances in the tradition of the group Fluxus. Its familiarity with the concept of *dérive* and of the psychogeography of the Situationist International enabled the group to identify strategies of action, urban space appropriation and displacement, which are confused on the streets with passers-by. The group, coordinated by Pedro Diniz Bennaton, has regional affinities with collective activists of Brazil, like Grupo Laranjas, of Recife, Empresa, of Goiás, and GIA, of Bahia, and also of Latin America, in the actions of H.I.J.O.S. In the urban scenario, which constitutes the group's stage, improvisations are at the same time protest and entertainment. The interventions build a situation with the public and the street, and confuse reality with fiction, questioning certain social standards, like the one of mental sanity in *Carga Viva*. In the context of the strategies and esthetics of the game, *Buzkashi*, an urban intervention of 2004, explores the limits between party and war and abandons the spectacular elements of the theater. Despite the desire to eliminate the frontiers between the spectacle's artificiality as artistic format and the urban scene, and the fact that the group uses the term expectator instead of spectator, to designate the participant as someone who brings their own context and expectations, there is in the game a clear role division between players and reflexes. Launched in 2006, also blurring the spheres of fiction and reality, which is commonly practiced in the esthetics of the pervasive games, *Desvio* invited the street's passers-by to represent a murder. *Enfim um líder*, of 2007, extended the experience

into an action that lasted three days. Using posters and the strategy of marketing and political propaganda, the action simulated the introduction of a political candidate on the streets.

Playing of Transforming Reality

Authentic challenges create greater engagement than artificial challenges. The example of *Oasis* is interesting, because the project stimulates emergency action and the practice of civil society's governability and autonomy in view of the State's lack of efficacy. *Oasis* was created in 2003 by Instituto Elos, a non-governmental organization founded in 2000 by architects and urbanists, which is also responsible for *Guerreiros sem Armas*. The strategy is cooperative social entrepreneurship both in *Oasis* and in *Oasis SC*, of 2008, on which we focus in this paper. Without an esthetic concern, the project uses the social platform Ning on the internet to call for participation, to schedule and distribute collective tasks like the construction of the interface in the platform and the formation of the teams for the collective reconstruction of flooded communities in Santa Catarina. The project has a national scope, creating many work fronts. In an interview, Einstein, a Computer Sciences student of ITA and someone that participated since the beginning of 2009 in *Oasis SC*, highlights in his experience the voluntary participation of all, and the donations, even the technological ones, received without using the propaganda of the logotypes of the involved companies.

Between the Artificiality of Artistic Language and the Participation of the Civil Society

Ciberestuário Manguezais is a development of *Mar Memorial Dinâmico* – an installation that uses tangible interfaces (2009) and Web Art (2008). The call for participation in *Ciberestuário Manguezais* focused firstly on the mangrove swamp of Itacorubi due to easy access and because it is where the university is located, promoting the students' reflection on the occupation. As the physical-chemical parameters that we would collect with the embedded system are monitored by companies that subsidize the production of mollusks in Santa Catarina's coast, the main strategy of *Ciberestuário Manguezais* is now the access to information and the appropriation of diverse means of communication and publicity. The utilization of the social platforms that already existed implied the redirection of the esthetics to the co-authored narratives and the community's appropriations of knowledge about the environment produced by the scientific community, making them become a public property. The investigation's character of pervasive game facilitated the different levels of participation, and also enabled the project to transpose the neutrality of certain esthetic propositions, acting in the sphere of the concrete.

Interacting with the Community

Comparing with the already established genres of pervasive games mentioned by the authors STENROS and MONTOLA (2009,31-45) and like

in *Treasure Hunt* games, *Ciberestuário Manguzeais* promotes the search for data in the physical area to compose the mangrove swamp page in the social platform. *Grupo ERRO*'s actions in the urban space are similar to *Public Performances* games, like *Carga Viva* 2002, *Buzkashi* 2004, *Desvio* 2006 and *Enfim um Líder* 2007. *Oasis SC* and *Ciberestuário Manguzeais* use diverse technologies in the colonization of new platforms. Similar to *Real Games*, considered by MONTOLA, STENROS and WAERN a pervasive *Paidia*, and not a game, they promote playful activities and performative actions in the physical world, raising the participants' awareness about the region where they live.

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Exploring Rural Territory as a New Medium

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Among the most relevant phenomena of the last years, knowledge economy has risen in importance. Seen as a development strategy for over-territorial growth, it is strictly linked to the change of vision from global to local and it is strongly influenced by the competitive rules of globalization, among which we can find distinctive elements of a territory that represent an essential benefit. Rural areas, that often suffer for competitive disadvantages in terms of infrastructures, services, knowledge and opportunities, are anyway characterized by some strongly connotative elements such as living sustainability and cultural identity. It is possible, therefore, to consider a vertical overview that is not conventional and alternative to stereotypes or rural tourism, and that is achievable not only through increasing the value of cultural, historical, productive and environmental richness of one territory but as well through improving all peculiar resources of a territory, starting from its history always allowing new languages and new ways in order to preserve and hand them down. Inspired by this logic, Interferenze and Mediaterrae Vol.1 are two projects oriented to firmly re-design the identity of a rural territory. Both of the projects aim at interpreting local dimension in a global overview and putting into practice a way of communication connected to planning and achieving cultural production actions, which interpose, between transmitter and recipient, not only a simple and rational message, but something of unexpected that is not possible to express, but only to feel. Both projects are developed in Irpinia, a rural region immersed in the deep heart of South Italy, enriched by landscapes full of abstract, wind and infiniteness, steeples, towers, narrow and quiet streets, place of an historical metabolism that is slow and almost solemn in its ancestral rituals. Interferenze is a festival which investigates and experiments relations and intersections among new technologies, territorial roots and cultures. In the constant research of connections of elements belonging to technology, tradition and rural landscapes, Interferenze puts forward its own view of an integrated development of territories. It offers an unusual writing of the natural environment which, through rural landscapes, outlying lands and the "inappropriate places" catches a glimpse of the ultimate sense of a complex action of a semantic reclaiming of identity and sustainability of territories. Mediaterrae Vol.1 was a further evolution

of this project' strategy, by extending the basis of the work begun in 2003 with *Interferenze*. The project had involved a network of stakeholders that is operating on Irpinia territory and is working on a series of rural development projects oriented to establish a structured system among the most active and qualified resources in the whole area. Eighteen audio and video artists belonging to digital art scene and coming from different countries in Europe and overseas were invited to confront themselves with the tradition of Irpinia, in a project aimed at documenting the cultural and environmental heritage of a whole territory, between nature and technology, tradition and vanguard, past and future. This residency project, that was also an audiovisual production and a final event, was focused on music tradition of Tarantella from the little village of Montemarano. The Montemaranese is a peculiar form of Tarantella with an ancient and mysterious origin, which is absolutely relevant from an ethnomusical point of view, and is played with popular tradition instruments like ciaramella and zampogna, assisted by clarinet. During the Carnival of Montemarano, the invited artists have been able to join the locals and their rites in which "the forces of tradition are competing with the ones of modernity" (G. Gala), being assisted during all operations of sampling and production of audiovisual material or consulting literary and iconographic sources. The final result was not only an event at Theater Carlo Gesualdo, in Avellino, but mainly a DVD release (10.000 copies printed), containing a film documentary shot during the whole residency project and seven audio-video works. The key factor of projects like *Interferenze* and *Mediaterrae* lies in the relationship with a territorial system available to become a substrate upon which it's possible to insert cultural production actions oriented to extend awareness on rural territory potential as a fruition place of an all-embracing experience. A place in which both the traditional forms of territory knowledge and the possibility of increasing the value of rural context as a new and unknown fruition field of cultural actions can converge. The territory, not anymore as a geographic place or a branding system, becomes an inland space into the media system, transforming itself in a medium: through the event, or its media representation, the space that separates transmitter and recipient is filled and a "distraction" of communication surface happens: a relation is realized, communication is activated. The rural territory is seen therefore not as a product anymore, but as a (new) medium with which to communicate and get in touch in a creative way as long as something unexpected can happen in the space between transmitter and recipient, experimenting unexpected relations through processes, strategies and results of the same communication.

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‘Proticipation’: The Australia Council and Social Media Arts in Virtual Worlds

Proticipation:

The Australia Council and Social Media Arts in Virtual Worlds [1]

In 2007 the Australia Council for the Arts became the first national arts funding body in the world to fund an artist residency in the virtual domain of Second Life. The successful recipients, writer Justin Clemens, visual artist Christopher Dodds and sound artist Adam Nash, proposed a mixed reality, networked project linking people in real life with avatars in a virtual world. Their residency project titled *Babelswarm* was a realtime, 3D sound sculpture grown from the conversion of words spoken and letters typed by people both in a physical gallery and as avatars in Second Life.

This residency generated one of the most successful media responses for any initiative the Australia Council has run to date. The project included several other highlights for the Australia Council, including the first in-world media campaign, the first in-world client meetings, the first in-world artists match-makers RSS feed, the first in-world international artist talk and the first in-world grants assessment meeting.

Babelswarm was a huge critical success, with a nationally profiled launch in regional Australia and Second Life. In part as a result of this success, several subsequent virtual world and social media arts initiatives were developed by the Australia Council to engage with a broader range of audiences, platforms, interfaces and curatorial practices, including the Massive Multi-user Virtual Environment initiative (MMUVE IT!); the *Frontline Media* initiative (involving Muslim and Indigenous Youth in Darwin); *Virtual Macbeth*; *Thursday's Fictions* and the Australian Centre of Virtual Art Laboratory (ACVA Lab), an interdisciplinary arts space for virtual collaboration.



Fig. 1: Artists from *Babelswarm*, the Australia Council's first initiative in Second Life. L to R: Adam Nash (avatar Adam Ramona), Christopher Dodds (avatar Mashup Islander), and Justin Clemens (avatar S1 Gausman). Courtesy the Australian Centre of Virtual Art (ACVA).

Built into the core of these initiatives' funding criteria were requirements for artists and curators to experiment with new curatorial practices, mixed reality participation and transnational audience development.

Much of the social media art that has emerged as a result, requires what I have termed *proticipation*. Proticipation describes the production of a social media artwork through the participation of users, either as avatars and/or in physical form. I use the term proticipation, as opposed to produsage (another term often deployed for this type of work) as proticipation implies a more active, performative engagement with the act of creation [2].

Although still at the beginning of these new virtual world practices, Australian funding recipients, and more recently major Australian arts institutions such as the National Portrait Gallery of Australia are continuing to develop critically acclaimed, globally engaged, mixed reality projects, where user proticipation is central to the co-creation of art.

Of particular interest is the emergence of a very strong Indigenous presence in these domains, highlighted by the selection of artist Aroha Groves' Second Life work for the inaugural new media arts category of the 2010 Telstra National Aboriginal & Torres Strait Islander Art Award, the most significant Indigenous art award in Australia.

References

- [1] Social media arts describes new types of media art that has emerged in social networking sites such as Second Life, Facebook, Twitter and other social media platforms. The term social media arts combines the concept of *Social Media* [or social networking] 'an umbrella term that defines the various activities that integrate technology, social interaction, and the construction of words, pictures, videos and audio' with the concept of *Media Arts*, which 'at its simplest level is the application of existing and new technologies within the arts'. Wikipedia: http://en.wikipedia.org/wiki/Social_media Accessed. 16 July 2008; *New Media Arts Scoping Study*, Australia Council for the Arts, 2006, p11; Peach, Ricardo *The Second Life funding Landscape: Keith Gallash Interviews Ricardo Peach, the Inter-Arts Office*, REALTIME, October-November 2008 www.realttimearts.net/article/87/9181 Accessed 19 July 2010.
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P 18

Musical Devices

- Thor Magnusson (gb):
ixi lang: A Constraint System for Live Coding
- Bernhard Garnicnig, Gottfried Haider (at):
■ Production of a Spatial Audio Narrative
- Luca De Rosso (it):
■ OTTO. Musical Instrument for Realtime Manual Beat Slicing
- Olivier Pasquet (fr):
The Doomsday of Music
- Steffen Müller, Frederik Kalisch (de):
The attract-o-tone: A Performance-Oriented Musical Interface

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ixi lang: A Constraint System for Live Coding

1. Introduction

In the late 1990s a new performance practice appeared in the more experimental venues of the musical world, where performers would step onto stage with a rather strange musical instrument, the laptop. These performance contexts, in pubs and clubs, were primarily designed for pop or rock bands. Instead of locating themselves behind the mixer, where the best sound is normally to be heard, they placed their equipment on the stage, typically on a table, and presented some rather refreshing and novel musical worlds. Whilst the audience appreciated the texturally sophisticated world of sound these instruments were capable of, the performance aspect of the music suffered. What were these musicians actually doing behind these screens on the stage?

A decade later some solutions had evolved, addressing this lack of coupling between the performer's gestures and the sound emitted by the speakers. One of them is VJing. By analysing the sound signal – typically through Fast Fourier Transform Analysis or even OSC messages sent from the sound generating software – the VJ is able to generate visuals that connect and represent the sound in endless interesting, yet arbitrary, ways. Another solution is represented by a field often called NIME (New Interfaces for Musical Expression), with university courses and conferences dedicated to the investigation (see www.nime.org). Here various interfaces have been designed that allow the performer to use her body, in a manner inspired by acoustic instruments, to control a digital sound engine. The third response to the problem of the exclusiveness of computer music performance is live coding.

2. Live Coding

Live coding needs no introduction, but as a summary it comes with an imperative that performers project their screens such that the audience is able to participate in the musical creation. And this should be done from a

clean slate where the code is designed in real-time. A dedicated forum exists for practitioners (www.toplap.org) and various papers have been written with topics that range from general introductions (Collins et al. 2003), to live coding in specific systems (see Wang & Cook 2004; Rohrhuber et al. 2005; Sorensen 2005), or live coding as artistic practice (Nilson 2007; Sorensen & Brown 2007).

A typical problem for the live coder is the high level of expertise required for such performance (Nilson 2007). Very few performers are able to exhibit those skills without consistent dedication to practise (Sorensen and Brown 2007). Although I have long been fascinated by certain virtuosic live coders, it seemed to me that such incorporation of dexterity strives against the primary rationale of the mechanical computer; namely the automation of rote tasks and the augmentation of mental capacity.



```

scale minor
tuning wchrom

jarret -> piano[7 1 5 3 ]
jar2 -> piano[ 2 3 5 ]-12116

jiml -> string[11 4 3233 ]132
jiml >> distort

grid 4 | | | | | | | | | |
all -> |o x o x |
hat -> | i i i i i i |

ambient -> wind[0 1 3 8 0]124
ambient >> reverb >> lowpass

future 4:4 >> swap jiml
>shift jarret 2
group drummer -> all hat
doze drummer
future 12:1 >> perk drummer
  
```

Fig. 1: A screenshot of an ixi lang session.

3. Design Rationale

From this perspective, I attempted to design a musical live coding language that would free performers from having to think at the level of computer science, allowing them to engage directly with music through high-level representation of musical patterns. Most importantly, the language should be easily understandable by the audience who would be able to follow each step of the performance, given a little bit of imagination in terms of interpreting language features and functions.

The ixi lang was intended to address a problem in live coding involving slow buildup times and lack of musical constraints. Too much freedom can confuse the performer. The goal was to be able to create a tune with rhythm and melody within a few seconds from the performance starting. The language should also be understandable to non-programmers who would be able to follow clearly the performer's train of thought.

4. Ixi Lang Functionality

The ixi lang has three modes of musical notation that can be generated and synchronised in real-time: melodic, percussive and concrète (sample based). These musical patterns are created in the form of identifiable agents whose performance can be adjusted through various methods (e.g., shifting notes, transposition, reversing, inverting, scrambling). Figure 1 shows a text document that serves as the code input window. The code is both as updated representation of the score (it can change according to the user's design of algorithms) and a direct instruction to the system's play mechanism (the score itself).

The ixi lang clearly affords a certain limited set of musical activities. It provides a scaffold for externalising musical thinking and through its simplicity attempts to ease the live coder's cognitive load. As a live coding system it goes further than most common live coding environments in providing a simple, high-level platform for musical improvisation. However, this is at the cost of possible expression, as height (in terms of abstraction) will always impede freedom.

5. Conclusion

The ixi lang was devised to address specific problems common in live coding performance, such as slow and laborious build-up, incomprehensibility, and difficulty in making simple musical structures. It provides the performer with a very high-level language where musical structures can be set up in a matter of seconds using a syntax that is intuitive and easily understandable to audience. With user comments such as (Magnusson 2010):

- "Wonderful to break free from the rigid time line approach."
- "The audience can immediately participate in the performance. The language is general and simple. At times funny to watch."
- "A release from the paralysis of choice! Still, I would love to be able to become more proficient with SC so as to tailor the environment to my needs."

With responses like these, I find that the project has succeeded in fulfilling the original aims.

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**Production of a Spatial
Audio Narrative****Introduction**

Craving is a site specific spatial sound composition set up by the two artists in the public space of Vienna's Donaustadt district. It unfolds while the audience individually wanders the high-rise area. Wearing headphones and mobile computing devices they physically navigate the piece. Their path is in no way – auditory or visually – predetermined, thereby allowing the audience to let themselves be guided by intuition and the aspects of the place.

Text

The text used draws on *Crave*, a play by British dramatist Sarah Kane. In it, four sparsely drawn characters weave a tapestry made up of quotations and fragments, the cloth of which are their individual traumas, loves, grieves and resignations. Plot and signs indicating temporal developments are reduced to a minimum. It is in repetition and the final defeat of communication of internal landscapes that we come full circle to the urban desert we found in between the towers of Donaustadt. Kane's text, which is filled with elements of subjective meditations on urban surroundings, but devoid of stage directions has been rearranged and expanded using pieces of everyday conversations to work with individual clusters according to the demands of certain places.

Method

The selection and spatio-temporal distribution of sound elements require a detailed study of text and conditions of the space such as architecture, flow of pedestrian movements and the rhythms of everyday life. The technology framing the production plays another very important role.

As environmental influences such as weather or social interaction surrounding the participants or their personal movement patterns cannot be



Fig. 1: Photo: Bernhard Garnicnig

foreseen, the sound design is not geared towards constructing a linear narrative. It aims, rather, to create individual, but loosely-connected scenes. To achieve this, acoustic elements are placed on street corners, on wide open spaces or in lively passageways as they relate to a sensation and meaning created by their architecture or the human beings inhabiting it. For this, the artists have developed a software, which enables a composition of temporally and spatially dynamic acoustic scenes.

Sound fragments such as spoken language or music are grouped together, following an internal temporal logic. These groups are distributed all over the area and linked through the recipient's perception as he moves through the space.

Applying their other senses and their feeling for the specific place the participants then put the perceived sensations into a larger context. This ability to freely associate intentional design elements through reflection accepts the spectator in the temporal and spatial complexity of his cognition.

Technology

The participant is equipped with a wearable computer and headphones. Custom software determines his position via GPS and tracks his head- and body movements through a magnetometer. Based on the sensor readings the computer renders the audio composition in real-time. This technology allows us to virtually place snippets of recorded speech and music at specific Latitude/Longitude coordinates, so that the participant is able to walk through them as if the voices in the recordings were actually there.

Site

Craving was envisioned for production in Vienna DC, a modern complex of commercial and residential buildings in the city's Donaustadt district.

This most preeminent area is defined by a branch of the river Danube in the south and the United Nations building in the north. Vienna DC was conceived entirely on the drawing board after plans for a World Fair in this location had been vetoed in a referendum in that same year of 1991. Nevertheless, ten years after its opening, the area is still *urbanity in progress*, as various vacant lots create a layered surface, whose heaps of dirt contrast with the spotless facades otherwise dominating the view. Vienna DC houses numerous multinational corporations and information technology firms in office skyscrapers, but there are also vivid residential zones in between. One can literally walk around a corner to see the number of suits diminished and people leading their lives in a slower and more informal way. There is a bizarre city within, whose 4.000 inhabitants have adopted to the given system of open spaces and the spatial logic of the complex. Unique architectural features strongly influence the way in which the space is perceived: a wide flight of stairs leading up to nothing, surveillance cameras placed at eye level, deserted children's playgrounds, a vast empty space whose floor is covered in glaring white paint. This microcosm allows the artists to use the space's emotional tectonics and possible associations while breaking with the normal patterns of movement, perception and interaction with the environment and other people.

OTTO**Musical Instrument for Realtime
Manual Beat Slicing****Luca De Rosso** (it)Freelance Interaction Designer
luderec@gmail.com**About the project**

OTTO is an electronic musical instrument for realtime manual beat slicing. The beat slicing is a well developed technique used mostly in electronic music, by means of what short rhythmical audio samples, of a few seconds in length, are cut into pieces to separate the main drum hits. These slices are then re-arranged in time, stretched, reversed, pitched up or down and so on, in order to create a completely new rhythmical section which could ideally last forever with continuous changes. The purpose of this project was to design specific controls for a technique that doesn't have a specific hardware yet. The device provides a tangible user interface designed with the aim of giving the user the feeling of having the sample in his hands. The performer can manipulate an audio sample in real time through the use of a restricted number of physical controls and clear visual feedbacks.

The philosophy

OTTO was designed after many comparisons between electronic musical instruments and conventional ones. Usually the second category is more engaging and requires an high and continuous control from the musician. This is due to the kind of interaction but also to the strong connection between sound, instrument and human being. Let's take a drum set for example: if you hit a snare you'll feel that the instrument is making the sound not just thanks to your ears but because you feel also the vibrations of it in your arm. This doesn't happen with a drum machine for instance, where the connection between sound and instrument is very weak. OTTO was designed thinking about other ways to improve this link between human action and sound, working on feedbacks and visual elements, but moreover designing specific interactions and their relative controls. The result is an instrument which

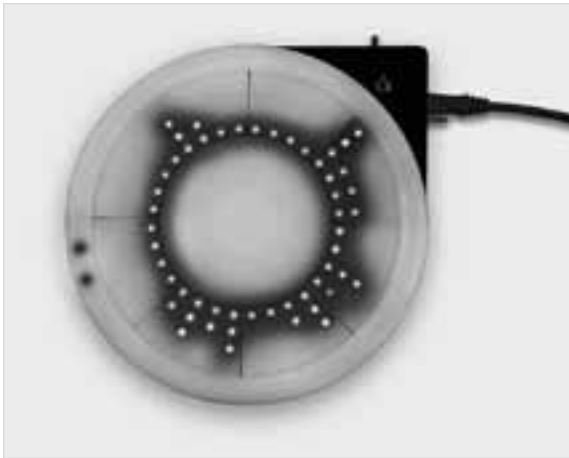


Fig. 1: OTTO playing a sample Photo: Luca De Rosso

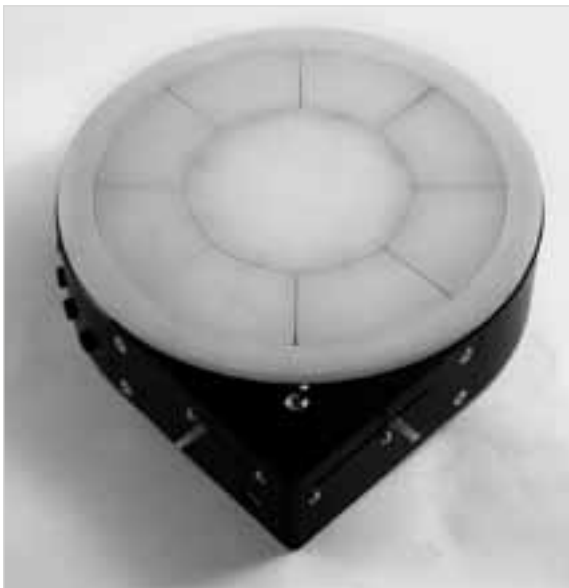


Fig. 2: Front view Photo: Luca De Rosso

doesn't necessarily make beat slicing easier – in fact there are computer softwares with algorithms which make very powerful effects just by moving few parameters with a mouse – but instead it gives to the performer more engagement and also more fun. This is also part of the reason why it's a musical instrument and not just a controller. As every musical instrument OTTO has its own learning curve, so to take the first steps with it is easy but if you want to push the instrument to the top of its possibilities you have to push yourself as well.

Feedbacks

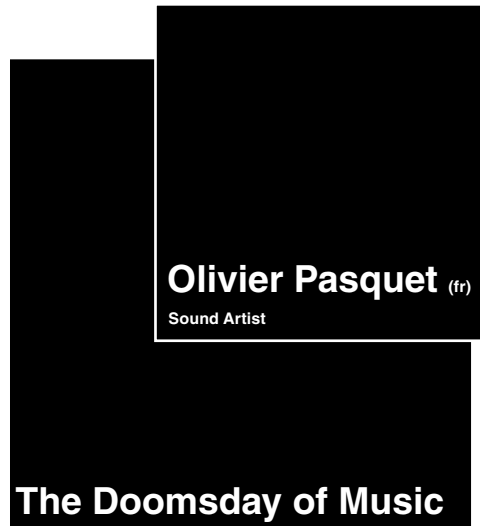
The controls work definitely better if they give a feedback in return. The main goal of this project was to show to the performer what's happening to the audio sample while you are applying effects on it. In computer music, the audio samples are generally represented with a detailed view of the waveform itself or with little colored blocks and many other shapes. Since to slice the sample, the instrument needs to be controlled very fast, the performer needs to understand quickly where and how to play a specific part. The sample's visualization on top of OTTO has in fact been designed to provide just the information needed for that and nothing else. It's still the wave form, but represented in an extreme schematic way, so the performer can understand at first sight which parts are more full of sounds and which are not. However, this visualization does not have the purpose of making understandable how a slice will sound before playing it but after watching it playing once, you'll never miss a beat.

The prototype

Making a working prototype was fundamental to test if all the theories and the designed features of the instruments worked. Moreover, it was very helpful to understand where and how to fix bugs and usability issues. Anyhow, since it was impossible to me to prototype the whole instrument, the final prototype shows more or less half of OTTO's capabilities; but it was enough to test the design and achieved goals. Besides that, the instrument is capable of giving a lot of fun even if it is not in its final shape. The hardware is powered by an Arduino board, which controls all the input and the visual outputs. The board is then coded with a protocol to communicate with a Max/MSP patch which handles the audio effects and analyzes the waveform to visualize the sample. Concerning this point, a few words are due, to say thanks to the Max/MSP, and the Arduino communities; without their help I would have never had the chance to show a physical and working prototype of OTTO.

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Many people worked on synesthesia with audio and video. The age of information moves to an age of physical information using conceptual and intelligent softwares, robotics and real digital fabrication.

This last year, I have been interested in materializing music. Writing a traditional score is most of the time not adequate because time and its perception are not behaving the same way as in instrumental music. Frontiers between creative process and performance process merged thanks to non linearity of time with algorithmic arts. Also, a generated piece does not have one single timeline. It is something much more complex that could only be described and written linearly until the combinatory pieces of Stockhausen in the 60's. Thus, representation and score combine in many cases and the need to write or describe music is very different from the one for instrumentalists.

The obvious way to do so is the use of dimensions, space or geometry. Many classical music composers use geometry. In our case since the only material constraint is perception rather playability, it is possible to extend this geometric abstraction in space; the real world.

I use geometric and architectural rules to represent and generate musical structures with the same approach as Yannis Xenakis used to do in the 70's. Geometry is a powerful tool mostly used for information theory and representation. It is also a great inspirational source for the genesis of musical forms.

My presentation will explain what I mean with "parametric composition" using a concrete example: a new piece called Kaspar.

De Saussure's structural linguistics is another story but architectural structuralism thru computational design is not an end. Scales and dimensions take an important role by adding other organized and self-organized elements to any kind of so-called structure.

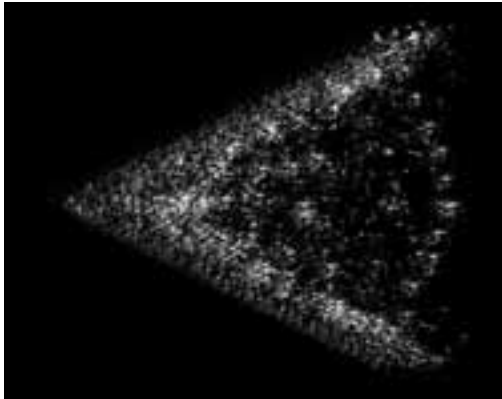


Photo: Olivier Pasquet

I will illustrate this idea with another installation project of materialized music I am willing to create in the near future: The doomsday of music.

Kaspar is a play from Peter Handke written in 1967. Peter Handke's Sprechstücke, through focusing on the performance of language, partake in the postmodern critique of representation. As a species of non-matrixed theater, theater which avoids the strong traditional fictional matrices of time, place, character, situation, and action, the "speech-plays" raise interesting issues pertaining to language, representation, presence, and performance.

The abstraction level of Kaspar is very rhythmical and very close to musical multilevel cannons and structures. This piece is not really a piece where time is directly involved. Reactivity or interactivity are useless because of the way we are forced to look at it and the way it has been generated. The time component is part of the visual and of its interpretation.

The doomsday of music is a small construction the design of which follows the same structural rules as the music and spacial movements played inside. It is a 5 meters wide digital fabrication (3D printing) made of fake or real spider web as a dedication to Louise Bourgeois. Since parametric composition techniques are used the real structure and its moving light reflexions and sound movements are together. A multichannel audio system diffuses 3D generated music made from the same emergence as spider multi-agents. As usual the challenge is to make people understand the relation between what they see and what they hear.

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The attract-o-tone: a Performance-Oriented Musical Interface

We all know the sound of a guitar, a piano or a trumpet. And with those rather traditional Instruments, the observer easily understands how sounds occur, which are created by. Yet, contrary to a drumkit or a theremin, most of the motion happens hidden in detail. Only the audience physically close to the musician gets to associate the movements of the hands and fingers with the produced notes. Who isn't near, won't be able to do that, simply because of not seeing what the musician is doing. And the more senses are involved in perceiving a situation, the more intensely it will be experienced. Therefore we intended to create an interface that demands exuberant gestures of the musician.

The attract-o-tone is a result of diverse approaches and phenomena, which formed its momentary state through an experimental development. The first thing was playing around with electronic waste. Through tinkering and circuit bending with leftovers from old guitars and RC-vehicles, we discovered the possibility to create very unusual soundscapes. The second step was to take a fixed idea and, through the process of rapid prototyping, rapidly make a prototype. We focused on developing an interface, that would possibly not depend on external power supply or any attached cables. Furthermore we investigated the qualities which the design of an instrument must achieve, which again led to the actual version of the attract-o-tone.

One of the attract-o-tone elements always is the actuator to the other element, which senses its behaviour and forwards the information in order to generate a responding sound. This duality and conversational character determines the shape of the interface. The relation of the objects to each other creates the sound. The relation(ship) between two persons also creates an atmosphere, that lays down the colour of the situations sound. If the persons feel attracted to each other, a certain tension fills the air. If one meets someone one finds repellent, on the other hand, the air can get thick. Those

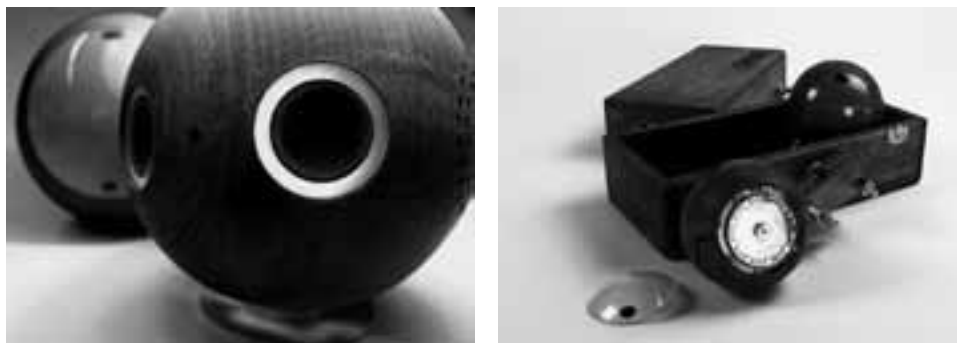


Fig. 1 + 2: The attract-o-tone

analogies are fundamental to the duality of the attract-o-tone. The playfull moment of the in-between is most important.

In order to make the handling of the attract-o-tone intuitive, we've given it a visual reference to the sound it brings out. The semitransparent vizor and jointings are lit by LEDs from inside, which corresponds to the actions and reactions.

Designing the spheres, we strongly emphasized that each one gets a unique look, that yet visually highlights the togetherness of them. Furthermore, the design had to be reduced to the functional aspects and refer to the way the interface shall be handled. The playability of analog instruments is mostly reduced to pushing buttons, keys or pulling strings. And in most instruments, this is reflected in the design of their bodys, which mainly consist of simple geometrical shapes. Therefore we stayed with a sphere as the body to our instrument. The sphere as a basic shape suits both left- and right-handed persons. And because analog resonators, or bodys of instruments, are in many cases made of wood because of its fine resonating and haptic characteristics (although in our case we didn't need the resonating qualities), we decided to craft the attract-o-tone from two solid wooden balls (beech in the first design prototype). Additional to the haptic value, the solid wood has a great visual quality. The vizor gives a direction, as well as it is the access for maintenance.

The stage setting of electronic musicians is dominated by tables for equipment like mixers, controllers, sequenzers and so on, while with more analog generated music, tripods, instruments and their racks dictate the scene. The case of the attract-o-tone is designed, for it to serve as a station to fit between the table-equipment, while also charging the batteries of the interface, as well as it can easily be mounted on a tripod with any standard clamp.

We are proud that the attract-o-tone already made 3rd place in the engineering category at the *diy-festival for mechatronic art in Zürich 2008 and 1st place for best student project at the ICMI-workshop on tangible music interfaces in Berlin, 2009.

P 19

Cyborgs and Transhumans

■ Eva Vrtačič (sl):
The Cartesian Subject 2.0: Body/Mind Dualism and
Transhumanist Thought

■ Vanessa Ramos-Velasquez (br/de):
Digital Anthropophagy & Anthropophagic Re-Manifesto: (for
the Digital Age)

■ Yonggeun Kim, Joonsung Yoon (kr):
Quasi-Autopoiesis. Sublimed Human Intellect

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The Cartesian Subject 2.0

**Body/Mind Dualism and
Transhumanist Thought**

Pathological narcissism represents a dominant form of subjectivity in post-industrial societies. (Žižek 1987, Lasch 1982) When the subject, characterized by the culture of narcissism, enters cyberspace, it becomes immortal. The body becomes obsolete and the game of immortality begins. The anthropological understanding of culture, in which culture represents a “natural environment” for humans, can be reinterpreted: cyberspace is the perfect natural environment for pathological narcissism. “Cut off from the real body, we construct a substitute body: ourselves online. We treat it as if it were our actual self, our real life. Over time, it does indeed become our life.” (Ullman in Boler 2007: 159) Digitalized bodies represent a “historically constructed Western individualist subject” (Green in Boler 2007: 163). Furthermore,

ironically, this new digital Cartesianism, initiated by a rhetorical cheerleading of the mind/body split as a desirable aim of CMC, ultimately results in the invocation of stereotyped bodies in order to confer authenticity and signification to textual utterances. (Boler 2007: 140)

In cyberspace one can do anything; change the way they look, explore alternative sexualities, play a fictive game of life and death, and the Game Over is always followed by New Game. If any aspect of the virtual existence becomes unpleasant, the user can start anew, with a different avatar, fresh taste in music, another blog. “Reality is perceived as malleable by Americans living lives of serial substitution, with the culturally acceptable premise that consciously manipulating or altering “reality” is a reasonable, if not desirable, option” (Barnett and Magdoff 1986: 416).

One of the constitutive elements of pathological narcissism is an irrational fear of death, manifested as utter denial of the idea of the mortal Self. This trait can be found in “normal” narcissism too; Freud (1914) was persistent in his claim that primary narcissism disables one’s ability to think one’s own death. He argued that in the realm of the Unconscious there was no death. Similarly, death is absent from cyberspace and in this sense, cyberspace represents the perfect metaphor for the Unconscious.

Netizens still appear to be quite sure of the difference between reality and cyber-reality. Nobody has doubts as to which one of the two is more “real”. Yet, this does not prevent very explicit cyber implementations of the fact that

no one believes: if you are not online, you are probably dead (see death-switch.com etc.). Furthermore, if you Google yourself and get no results, you most likely never existed at all. Modern Westerners, swearing by hard sciences, medicine, scientific certainty and similar ideological constructs, realize suddenly that the only final, convincing death is the failure of the digital, rather than the physiological function. You are dead when you get disconnected.

This goes beyond "social" death, as it can involve perfectly "real", physical death, too. Biology no longer appears to be the final instance which we cannot overcome. To prove this, one must only look at the numerous cases of death connected to the online game World of Warcraft. In 2005 a Korean baby died while the parents, passionate gamers, simply forgot about him. So much for the "maternal instinct". The "survival instinct" is not doing much better; there are several reports of deaths due to playing WoW for days on end, leading to multiple organ failure. For example, a Chinese player, called Snowly, collapsed and died after 160 hours of playing. There is a famous print screen of her funeral in Second Life circulating on the Internet, showing virtual bodies mourning the loss of a physical body that failed to endure the virtual strain. Or, as Balsamo put it:

Upon analyzing the 'lived' experience of virtual reality, I discovered that this conceptual denial of the body is accomplished through the material repression of the physical body. The phenomenological experience of cyberspace depends upon and in fact requires the willful repression of the material body [...] (Balsamo in Boler 2007: 159).

In the light of the ultimate narcissistic fantasy of immortality, that coincides with the ultimate transhumanist agenda of digital immortality, uploading the consciousness onto a super-computer (Harris 2001: 134), the physical body has become excess weight, burden, annoying carrier of viruses. Realization of such fantasies may seem like sci-fi and is utterly utopian from the point of view of prevailing morale, if not from the point of view of technology, but to us the mere fact that transhumanism, even if sometimes understood as the hi-tech version of social evolutionism, celebrating values of Enlightened humanism, rationalism and classical liberalism, is re-invoking the classical Cartesian subject, imprinted with body-mind dualism, can be interpreted as symptomatic rather than humanist. It is perhaps the transhumanists that represent the contemporary culture of pathological narcissism best.

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Digital Anthropophagy & Anthropophagic Re-Manifesto (for the Digital Age)

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Anthropophagy:

From Wikipedia, the free encyclopedia

Anthropophagy: (Greek: anthropos, "human being" + phagein, "to eat") is the eating of human flesh. It may refer to:

- Man-eating, the eating of human flesh by animals (such as sharks, crocodiles, or lions)
- Human hematophagy, the sucking of human blood by animals (such as leeches or mosquitos)
- Cannibalism, the eating of human flesh by a human or humans
- Self-cannibalism, the eating of one's own flesh
- Eucharist, the ceremonial eating of Jesus' body as wine and bread (see Anthropophage)

Digital Anthropophagy:

From Vanessa Ramos-Velasquez

- All of the above anthropophagic practices if done virtually, i.e., with the aid of computers, online social networking, and other digital devices; or if executed in reality but facilitated digitally.
- A new paradigm of input/output models generated via the internet.
- A new practice of cultural consumption involving a technological mediation for input (both the feeding and the being fed), digestion, and output.

Abstract:

Background history leading to my discourse on Digital Anthropophagy:

For many years I have dealt with the conundrum of legal usage of found and acquired visual materials in my video art and experimental filmmaking. As an artist, I create new contexts for these materials. By using such imagery in my work, I call under question the validity of ownership claims of usage of

the owner's discarded materials, and what is considered fair use. I construct new narratives out of other people's discarded and dejected recorded memories, creations, and events.

In the process of doing this type of work and the advent of the internet with its new paradigms of the digital revolution, I was constantly reminded of the anthropophagic practices in Brazilian indigenous culture. The cannibal eats what he/she considers to be foreign in order to see through that person's eyes and incorporate their strength, experiences and qualities. But I find that in today's digital culture, we as an audience, watch the world around us in a globalized structure, thus quickly acquiring worldly references and spitting them out in a personal but also somewhat homogenized way. We have thus become both the cannibal and the cannibalized because of the wide and immediate access to information and the incredible reduction of time it now takes to consume that widely available culture. It no longer takes a passive person watching the ships arriving on the shore in order to consume what they might bring aboard, and conversely, for the colonizer in those ships to take away the riches they "discover" in far-away lands. Over five hundred years later, that exchange has now become horizontal and thus cross-pollinated and equal, and happening with an inhuman speed cycle.

Background history leading to my Anthropophagic Re-Manifesto:

In 1928, a Brazilian modernist, Oswald de Andrade wrote the Manifesto Antropófago (the Anthropophagic Manifesto). It was a reaction to the outside influences on Brazilian culture and how Brazilians react to and consume those foreign influences. It was as much a dictum against the colonizer's power over the colonized, as it was a criticism of the colonized people's hunger for the unknown.

In my Anthropophagic Re-Manifesto, I expose that the allure, the attraction of "the other" is mutual and that it serves to form a symbiotic relationship that feeds both peoples. The concept of "the exotic" is a two-way road, for if one has never seen the other before, their mutual discovery is of equal impact, and a curiosity to consume that newfound exoticism is occurring on both sides. But the great line dividing this equality in colonial times was an economic one: the colonizer upon seeing a newfound land sees money, while the "found people" just sees unknown people. That very innocence is the exotic raw material that so many in the First World seek, but beware as even in that innocence lies the cannibal spirit. And since there's no more land to discover, the colonizer has now become the entrepreneur who seeks to conquer the virtual landscape of 1's and 0's.

My Manifesto-Poem is therefore a new take on the original "Manifesto Antropófago." It is but a glimpse through a prism reflecting how the indigenous anthropophagic cannibalistic practice resonates to today's civilized society, materializing as cannibalistic remix culture spanning the entire world in an age where virtually all colonies have proclaimed their independence. It's the new world order: anyone can choose to be either the colonizer or the colonized, and why not both?

Anthropophagic Re-Manifesto (for the Digital Age):

(excerpt: first part)

Who discovered whom?

Was it the Portuguese discovering the native Brazilians just because of the effort in building the caravels, setting them onto the ocean and embarking on the long trip?

Why not the other way around?

Just because the indigenous people were in a passive position of merely having their eyes open and seeing the foreigners arrive?

Who ate whom? ...

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Quasi-autopoiesis; Sublimed Human Intellect

Introduction

This paper acclaims the sublime of objectified human intellect by utilizing the quasi-autopoiesis in the generative art. Unlike the computational sublime, my discussion turns the computation as a tool for projecting the sublime to the computation as a copied intellect and connects the computation to the humanness.

The Generative Art as Quasi-autopoiesis

As an object for aesthetic judgment, the generative art makes its emergence not by the autopoiesis but by the quasi-autopoiesis. Though it is true that the representation of generative art is unpredictable, this cannot be an approval for what our intellect result in a true genesis. Regardless of whether the human has enough ability to judge the generation or not, we have to consider how the result of human intelligence can be independent from the viewpoint of human intelligence itself. And this logic also can be applied to the autonomy in generative art. So, it is not an exaggeration to say that the man-made autopoiesis reflects only the human understanding for the autonomy and emergence. Because the autopoiesis of generative art is always regulated by the human intelligence that designs and demarcates the boundary of generative art. (McCormack and Dorin 2001; 73) Moreover, as Immanuel Kant noted as he-autonomy the autopoiesis that human makes in reflective manner of nature is prescribed "*only in a subjective aspect*" (Kant 1914; V186) for human and human intelligence. Thus the emergence of generative

art is delimited by human intelligence and the autonomy in the generative art is an abstraction of intelligence, the quasi-autopoiesis, derived from the he-autonomy of human.

Recursion in Sublime

As similar as the man-made autopoiesis is always the quasi-autopoiesis in the reflective manner, if any generative art with the quasi-autopoiesis can be judged as sublime, that judgment is recursive. The magnitude of computation and its unpleasantness in generative art with quasi-autopoiesis can be judged as sublime in the notion of computational sublime. (Moloney 2009; 65-66) If we agree with this, on the basis of the Kantian mathematical sublime, the discontinuity between the computer-generated emergence and its unpredictable magnitude noticed by human reason is a premise for the judgment of sublime in generative art. In the notion of the mathematical sublime there exists the incomprehensible magnitude that we encounter. (Kant 1914; V248) In addition, the magnitude of what is represented in the imagination, which relates the distance between the subject and the representation, comprehends the maximum beyond where our reason cannot reach. (Kant 1914; V252) Moreover, the sublime, the pleasure with this comprehension, is enabled by the faculty of reason that tells the imagination the maximum beyond itself. (Deleuze 1984; 50) Thus it is possible to say that, in the judgment of sublime, the reason has a significant role as it informs the imagination that the maximum exists. So, to the extent that the reason relates not to the representation in cognitive sense but to the imagination in one's subjective judgment of sublime is recursive. Namely what can be judged as sublime in the generative art is not the representation which is resulted from the quasi-autopoiesis but the quasi-autopoiesis which renders the representation.

Sublimed Quasi-autopoiesis as Recursive Question

By the assertion that the sublimed quasi-autopoiesis exists in some generative art, the machine intelligence in generative art can be regarded as a reflection of the human intelligence. For the judgment of sublime, the human reason should be aware of not only the sublimed object but also the failure of the intelligence, the imagination. Thus the judgment of sublime means not only the aesthetic judgment on specific object but also, in its basis, the reflective consideration on the human intellectual ability.

Every moment when the scientific knowledge for what is observed leapt decisively comparing with prior level, men threw the questions of self-reflection which is ignited by this knowledge leap. Each time when the scientific leap occurred by such as man-machinism, Darwinism, psychoanalysis and communism/capitalism, human has objectified the humanness and deepen the understanding by this objectification. (Mazlish 1995; 3-13) Thus, generally speaking, the theoretical understanding expands its continuity with the reflective question on the humanness. In the same sense, the computation ability of the generative art also can be regarded as a question on the continuity between the computing machinery and human intelligence. With

its aesthetic conditions the generative art questions the objectified human intellect in the name of sublime. What the generative art renders is not a possibility for man-made autonomy but a question on the continuity and the discontinuity between the man and machine in the aspect of intellectual ability. And the sublimed quasi-autopoiesis in the generative art is on the edge of this question.

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P 22

Really Existing Social Media

Hosted by DATA browser and Neural

■ Geoff Cox (gb):
Introducing Really Existing Social Media

■ Alessandro Ludovico (it):
[Id]entities as a Multilayered Self. The Individual
Pervasiveness of Social Networks

■ Rui Guerra (pt/nl):
Online Communities and Client-Server Architectures

■ Katrien Jacobs (cn):
Lizzy Kinsey and the Adult Friend Finders

■ Florian Cramer (nl):
Analog Media as (Anti-)Social Networking

The panel explores some of the paradoxes of social media and intends to engage critically with really existing examples. Although popular platforms facilitate unprecedented levels of sharing, the social relation is arguably produced in restrictive form, and personal and collective exchanges are further commodified. But instead of refusal we should recognise that this is another site of struggle unfolding under particular conditions and with a particular history.

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Introducing Really Existing Social Media

Social media facilitate unprecedented levels of sharing but the social relation is produced in restrictive form. As part of the friendly (inter)face of capitalism, restricted social relations are perpetuated through networks of friends (everyone is more a potential friend rather than enemy), such that antagonistic social relations are masked and the political dimension nullified. :) Evoking Carl Schmitt's notion of enmity (in *The Concept of the Political*, of 1927), the political differentiation of friend or enemy lies at the heart of this, and offers a definition of 'the political'. In order to examine the paradoxes of social media, its promises and its shortcomings, what is required is a more detailed examination of the power relations at work, and how they are configured within informational capitalism, and how social relations and control structures are managed. 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, and yet power continues to produce its own vulnerabilities, not least in the context of how 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 offer effective participation in the political process.

A recent project by Les Liens Invisibles uses the tactic of over-identification to respond to an over-mediated democracy. *Repetitionr* 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 user-centered experience (<http://www.repetitionr.com/>). The success of every campaign is guaranteed as just one click is all it takes to generate a whole campaign with up to a million automatic fake signatures. The project reflects the acknowledged need for new institutional forms that challenge existing systems of governance and representational structures, as a blatant expression of *non-representational democracy* – in other words, a form of democracy uncoupled from sovereign power. The approach challenges the discourse of neo-liberalism in general, offering a means to rethink politics within network cultures. If *Repetitionr* is an example of over-identification with *real existing* participatory democracy, then the provocation is that we need to develop far better strategies and techniques of organisation.

That forms of democracy and authoritarianism operate dialectically is in keeping with the liberal tradition, as Etienne Balibar explains, and the distinction between individual opinions and collective actions in the ways they 'reciprocally "underwrite" each other' (2008: 27). Individuals voice their diverse opinions, both for and against the ruling power, in order to legitimate its effects. 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/subjectivisation. Participation becomes a technique of power in restructured form, one that captures the willing subjectivity of the user in the participatory process.

Clearly we should neither be overly optimistic nor too pessimistic but recognize that this is a further site of struggle unfolding under particular conditions and with a particular history. Perhaps it is more fruitful to imagine social media in terms of arrested development, and continue to strive towards how private ownership can be returned to the public realm – and how server-client relations can be transformed in peer to peer relations. On the one hand, centralized forms (the server/sovereign state) have been proved unsustainable in the new technological and cultural situation (think of the end of 'real existing socialism'), and on the other, real-existing liberal democracy has brought about the destruction of protections, aggressive competition, and economic corruption (Berardi 2009). However, the intention is not to make the mistake of imagining utopian alternatives as such (as the analogy to socialism in the title of the panel suggests), and only be disappointed with the lived reality, but to engage critically with really existing platforms.

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 in other words how they participate in contradictory forms of action (2001). 'Politics is a paradoxical form of action' he says, and is defined in the contradictions at the heart 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. 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 (Kelty 2008). Social media require further modification but on condition that they are released fully into the public domain for further development.

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**Alessandro
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a.ludovico@neural.it**[Id]entities as a
Multilayered Self****The Individual Pervasiveness
of Social Networks**

The dissolution of the 'identity' as we used to know it (before the networks) has led to an ongoing fragmented and fast evolution. In a networked society, identities can be formed by extremely varied and juxtaposed layers of what results finally as an "enriched self." In fact, there's a constant mediation that is applied to every single identity through multiple platforms and standards usually identified with the popular "web 2.0" expression. This mediation leads to multiple partial representations of the self in a multilayered form. What happens is that out of the ordinary physical life, our mind has already started to think in these terms. We feel our identity not anymore as an indivisible whole, but as composed of different pieces that are deeply and reciprocally influenced by our online experience. For example it's psychologically challenging that now we're able to retrieve people we should have simply lost in the past (old friend, old boy/girlfriends, etc). This scattered pieces have different shades of transparency, and they are redundant, hosting similar scattered bits of personal content. And the transparency of the self seems to be reflected in different fields. We can find it in the booming of the gossip news production in the last decade that seems to have at least influenced new levels of social transparencies both virtual and real. In the Standard Hotel in Manhattan, for example, most customers are behaving as exhibitionists near the room's big windows facing a popular public park, almost encouraged by the hotel personnel. And what we used to call "avatar" has evolved from an iconic pixelated representation of the physical self (either the real one or the imagined one) into only one of the many virtual layers on which we stratify our public online presence.

Online identities can be typified in a sort of "species" taxonomy. It'd be summarized as: 1. the real person; 2. a real person assuming a famous character and playing as him/her; 3. a real person creating and playing a plausible fictitious character; and finally 4. a computer generated and self-sufficient character. Cheating in the description or the use of an online profile is as common as the projection of a desire or an emotion on a networked environment, and in the end conscious and unconscious emotions are actively building the "enriched self." It's also about the intertwining of the

different relationships that starts to move on the network where the loosely attached piece of the self move onto. Then hundreds of Facebook “friends,” for example, coupled with the offline ones, and the others scattered on the other different platforms are “writing” a sort of automatic narrative that can always be dreamed as “fatally wonderful” at some random point. In this sense “The Big Plot” by Paolo Cirio is a multifaceted plot that intertwines the paths between its four protagonists. The pieces of their respective identities are created not by short descriptions or memory flashbacks as they are in a typical serial narration of a fiction book. They are scattered in different platforms carefully using the respective reference media (video, picture, CVs, bits of personal activities and so on). Actually there’s no software tool able to effectively combine all these different data sets into an (incomplete) human profile, so the user role is both strategic and uniquely revealing. And so the definition of a character becomes so ethereal that any possible manipulation seems to be possible. It’s a whole amount of information just properly structured, but potentially re-combinable ad infinitum. The induced vertigo, then, is of infinite characters misplaced between reality and fiction, infinitely programmed and stitched with real facts and data. So this fast recombination of data and the fast conglomeration of a trustable fictive identity is a process that pushed to the extreme can populate the social networks with patched human-like figures. They should populate the networks, reflecting physical reality and its dynamics, and contributing to shape an online landscape that includes these soon-to-become “extensions” of our daily life. And this leads to the continuously promoted self. In this respect, there’s an induced process of stratifying layers that are artificially connected, owned by corporation licenses, often overlapped and meant to be accumulated through a chimeric currency called “social networks reputation.” But is this implying a real commodification of relationships? Absolutely, even if it’s not a pure commodification. It’s better defined as a bastardization of the beautiful and free spirit of human relationship, shamelessly mixing old friends, fresh self promotion and desperate need to feed self esteem in an overcrowded networked environment. And the border of bastardizing and then eventually commodifying personal relations is easily crossed, inducing a mutual public “profiling” that has no end. The fragile digital identity is then not only scattered around the different identity-related entities, but also shaped around a production of elements that are both personally and randomly collectively generated. And here it lies the biggest potential: intertwining personal and public acts in an inextricable way, in order to build something that is not a “narrative” in strict sense anymore, but a new hybrid that embodies the definitive merging of real life and digital life, with no chance anymore to distinguish one from the other.

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Online Communities and Client-Server Architectures

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Since early 2000, the World Wide Web has become a common place for online communities to collaborate and exchange information. Most of that exchange occurs under the auspices of equal participation on platforms that in fact are privately owned and controlled. In his article 'The social web and its social contracts' Michel Bauwens states such conflict clearly: "The social web facilitates an unprecedented level of social sharing, but it does so mostly through the vehicle of proprietary platforms." (Bauwens 2008)

The centralization of control existing in communities based on the Web is not specific to some platforms but it is inherent to the Web architecture. The Web, as we know it today, is based on a client-server architecture using the Hypertext Transfer Protocol (HTTP) as a communication standard. The power relations existing on the web have been extensively analyzed by Alexander Galloway on his book 'Protocol – How control exists after decentralization'. For the sake of brevity, this text focuses on the less discussed aspect of server-client architectures. The server is typically a computer running an application that responds to several client requests. The word 'client' can be seen as an euphemism for slave, as the 'client' is always limited by the server defined rules. The exchange of information, that participants of the so called social web experience, is in fact an illusion of direct communication since any interaction between participants is mediated by servers. Therefore, the participation model that the social web advocates is much closer to manipulation than to equal participation.

In order to demonstrate the manipulative power of the client-server architecture, the project *www_hack* has been developed, which encompasses a script that can be installed on a website by simply including the following code on the HTML page header:

The script alters the normal behavior of the page by exposing the mouse movements of all visitors. For example, once the webpage is simultaneously visited by five different users, it is possible to see five mouse cursors moving in 'real-time'. When there is only one visitor the page operates as expected and there is no immediate evidence of the script tracking mouse movements. The script creates an immediate and sometimes sinister evidence of the presence of the other since the server does not provide any possibility of contact other than moving a computer mouse. Users are therefore trapped in

a forced participation controlled by a server, at least as long as they visit the website and do not turn off the javascript engine.

In order to change the power relations existing on online communities it is fundamental to revise the ownership of their foundations. In his 'Antisocial Applications: Notes in support of antisocial networking', Geoff Cox writes:

"[T]erms like social networking hold the potential to transform server-client relations into peer-to-peer relations but only if held within the public realm, outside of private ownership and as part of the commons." (Cox 2008)

Networks based on peer-to-peer architectures are an alternative to privately owned infrastructures. In such architectures there is no differentiation between nodes, instead all nodes are considered peers and communication is achieved by exchanging information among peers leading to a network that is owned by all participants. However, it is important to notice that peer-to-peer and client-server architectures are not incompatibly and are often used simultaneously. The use of server-client software on top of peer-to-peer networks immediately compromises its distributed aspect as the software becomes a central point where control can be deployed.

The project *Laptalk*, demonstrates the client-server hegemony on distributed networks. *Laptalk* is a presentation system that can be used to deliver slide presentations directly to the spectators laptops instead of the more traditional setup where slides are presented using large projections. Before the presentation starts, the spectators are encouraged to join a mesh network initiated by the speaker. Once several spectators have joined the network the speaker's laptop is temporarily turned off to demonstrate that the network is not centralized on the speaker's laptop. The speaker invites the spectators to point their browsers to the IP address of its own laptop where a web server is running the *Laptalk* software. Such software is based on the same code used to implement *www_hack* and allows the speaker to control in real-time the slides that are deliver to the spectators. When the speaker moves the presentation to the next slide, the webpage that the spectators are visiting is automatically updated to the next slide. Although the computers are interconnected using a distributed network, the presentation is controlled only by the speaker.

Online communities that wish to control the rules of their exchange must take into account that neither the network nor the software they operate is based on server-client architectures. Such issues affect not only online communities but all people that exchange information online. For example, most email software used today is based on an server-client architecture. In fact, it is intriguing to notice that most of the software we use today is based on a server-client architecture.

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**Lizzy Kinsey and the
Adult Friend Finders**

DIY Pornography: Living and Breathing with Cybertypes

AFF.com is a massive transnational social network run by a corporate-driven American entertainment company that allows people to buy a membership and upload sexually explicit photos and videos. It is one of the leading commercial websites of an ongoing trend towards Internet sexuality as participatory digital media or DIY pornography, involving a blurring between selfhood and the ephemeral signs, myths, and pathways of netporn culture. Web users across the globe are encouraged to formulate and depict sexualized selves to get access to other people's databases and arrange cyber encounters or actual sex dates.

Friendfinder Inc. was founded in 1996 by a Silicon Valley company called Various that pioneered different sex and dating sites. In December 2007 the site was sold for a ground-breaking US\$500 million to Penthouse, making a successful adjustment from traditional pornographic media to DIY pornography – the era of user-generated content and social networking. It thus became the world's largest corporate network for adult entertainment, owning a booming family of sex sites and a combined membership of more than forty million. The network now caters to a wide range of cultures and communities based on various demographics such as age: seniorfinder.com, religion: BigChurch.com, JewishFriendfinder.com, and ethnicity or nationality: AsiaFriendfinder.com, IndianFriendfinder.com, Amigos.com, German-Friendfinder.com, FrenchFriendfinder.com, KoreanFriendfinder.com, and Filipino Friendfinder.com.

These websites promise endless possibilities for inclusive and imaginative self-display and sexual joy, but are they really helping people to experience stimulating encounters within the sex culture of Hong Kong? Although there are in theory very few restrictions on the kinds of sexy pictures and videos Hong Kong people can exchange, their choices are affected by engrained cultural behaviors, local social lifestyles and normative preaching by the expansionist corporate site itself.



Fig. 1 : Lizzy Kinsey Profile Pic



Fig. 2 : Lizzy Kinsey Profile Pic

One of the projected behaviors on AFF.com seems to be an assumed familiarity with pornographic clichés of gender and race; or a collective use of generic and predictable names, images and profiles. Nakamura (2002) has pointed out in *Cybertypes: Race, Ethnicity and Identity* that digital networks are indeed socially transformative spaces precisely in how they allow people to play with stereotyped depictions of race and gender within emerging media cultures. As she writes:

Cybertyping is the process by which machine-enabled interactivity gives rise to images of race that both stem from a common cultural logic and seek to redress anxieties about the ways that computer-enabled communication can challenge these old logics (Nakamura 2002, 5).

It is hard to pinpoint who the perpetrators of this cultural logic are, as web users collaborate in creating the semantics of a new medium while equally challenging older cultural logics.

Nakamura is interested in how racial identity, racial diversity and racist attitudes are engendered in machine-enabled communication practices and believes that cybertyping performs a crucial role within the signifying practices of networks. Even though this study about AFF.com is not primarily focused on race and racial identity, it applies Nakamura's philosophical approach to studying self-display. People may decide to disguise as "types" in order to maximize their chances at finding partners, though these signifying practices would obviously be hurtful and off-putting to potential partners.

This study aims at revealing sex as complex inter-cultural probings and frustrations behind the use of a simplified social mask. In doing so, it examines the social-cultural associations people may have with this specific network in deciding whether or not to be sexually connected. Boyd (2007) for example has functioned as a participant ethnographer of the social networks MySpace and Facebook to witness deep-rooted social divisions amongst US teens. Her study reveals how popular networks easily reproduce a social elitism or ethos of upward mobility that leaves behind the imaging processes

of fringe or minority cultures. The self-representations of Hong Kong sex seekers are read against this background of social unrest within a potentially emancipatory sex site. Web users exploit social networks because they want to parade and display their subjectivities and social connections (Donath and Boyd 2004, 72). As players within AFF.com, web users show themselves and their social circles as sexualized subjectivities and cybersexual types. How can we capture, contextualize and re-imagine this process of sexualization produced by machine-generated human behaviors? Through my interactions with AFF.com as “Lizzy Kinsey, scholarly sex machine,” I acted diligently and emphatically to find my own answers and sexual connections, while inviting web users to cooperate in generating a unique kind of reflection.

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Analog Media as (Anti-)Social Networking

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When the World Wide Web emerged in the early 1990s, it seemed to solve all the issues with which small press production and distribution had been haunted, from fanzines and artists books to audio cassettes, Super-8 and video filmmaking. Finally, there was a universal publishing medium that, beyond merely integrating those media, was – to quote Hans Magnus Enzensberger’s vision of “the new media” from the early 1970s – “egalitarian in structure” and allowed “anyone [...] take part in them by a simple switching process” (Enzensberger 1970, 261). It took, in Western countries, another decade for high speed Internet access to become ubiquitous and fulfill this promise not only structurally, via network architecture, but also practically, through affordable bandwidth and computing power.

Today, while the seemingly inevitable seems to have accomplished, the zines, tapes and Super-8 reels come back with a vengeance. There is a boom of artistic print fanzine publication. Unlike fanzines in the 1970s and 80s, which typically served as quickly made, diary-style community media with personal, informal reports of concerts or soccer games, their communication is mostly non-verbal, or at least non-journalistic. In other words, the use of the “old” medium has profoundly shifted through the competition of digital platforms where blogs and social networks have taken over the function of quick referencing and reporting media. Today’s print fanzines indulge in the xerox aesthetic that, in the past, was more a makeshift necessity than a free choice. But the new print fanzines are not merely the old print fanzines minus the functions better served by the Internet, and thus reduced to their pure form. They also exist only in the frame of the Internet as something they choose to be not, or choose to be an alternative to.

“Analog media” are, strictly speaking, a colloquialism since all storage and transmission media is analog (electricity, conductors, waves, light, magnetized metal etc.) and only information can be digital. What we commonly call “analog media” are systems that do not transmit or store information by coding it into countable, discrete entities. Often, information storage and display are identical, like in photographic film. Analog photography is going through

a renaissance and a major collector's and specialist's market – which, in another reciprocal relation, could mostly be organized via the Internet. Super-8 is going through a similar Renaissance as fanzines and cassettes. Nevertheless, many if not most films are telecined, most frequently viewed on DVDs, YouTube and Vimeo. It is, last not least, the grain, judder, dust, scratches and oversaturated colors of Super-8 amateur film stock have been embraced as the unique qualities of the medium.

The same is true for the current Renaissance of the audio cassette, a medium that objectively provides no technical advantages over more contemporary audio technology. A new cassette tape scene has emerged whose work can be found, for example, at the bookstore Family in Los Angeles and the Tape Treff concert and performance series in the Netherlands. Even the consumer electronics industry is reacting and has put new tape decks on the market. In the 1980s and early 1990s, cassette culture was arguably the first do-it-yourself file sharing culture. In 1984, the music journalist Ulli Bassenge noted about the German post-punk cassette scene: "The emphasis is on fun and communication. The audio cassette is fast, spontaneous, suited for unusual concepts, everyone can record one and most importantly DELETE it again".

In other words, it was the first rewritable electronic mass medium, the first widespread audio technology that wrapped media authoring, reproduction and consumption into one and the same machine and storage device. The renaissance even of the obvious inconveniences of analog materiality – from xeroxing to the inconvenience of postal distribution – might simply be called a nostalgic retro phenomenon. But this would grossly underestimate the massive current cultural movement towards pre-digital media technologies.

As "social media", xerox sheets, audio cassettes and small-gauge film are surprisingly modern. Since, as previously defined, they do not transmit or store information in a coded, countable and easily computable form, they have become tactical sharing media for evading corporate and public control. The primary purpose of digital photo cameras, for example, no longer is to make images, but data sets that are being uploaded to sites like Flickr to track subjects through conglomerations of visual information with extensive meta tagging, even including geographical coordinates. The list can be arbitrarily extended for any form of information, text, sound, moving image.

Through the so-called Web 2.0 and so-called social media, the notion of sharing, community and participation have been thoroughly perverted. Using the World Wide Web has become synonymous with being tracked and data-mined. The only resort to responsible social communication is to practice anti-social communication. Analog low-tech media experience a renaissance because of their tactical aptitude for genuine sharing between people, for being more difficult to track.

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P 23

Coded Cultures and Japan Media Arts Festival Panel Session

14th
**Japan
Media Arts
Festival**
文化庁メディア芸術祭

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■ Georg Russegger (at/jp):
CODED CULTURES: Exploring Creative Emergences

■ Georg Tremmel (at/jp), Shiho Fukuhara (jp):
Common Flowers / White Out. Bio-Hacking, Open-Sourcing
and Exorcising GM Flowers

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CODED CULTURES
Exploring Creative Emergences

Codes and Cultures of Creative Delineation

Since a couple of years the codes of creative cultures have been put into perspective pretending globalized societies and city policies. Questionable terms like creative and cultural industries (Landry 1995, Florida 2002, et. al.) are not able to subsume the complex states of art in which new innovative operations have been pushed by artistic modes of delineation. Within the framework of CODED CULTURES, a platform established 2004 by the group "5uper.net", the focus lays on ability profiles, knowledge cultures and projects of artists, researchers and producers departed from the digital realm. Working on the intersection of disciplines like Art, Science, Technology and Design, requires strong networks of cooperation between individuals, communities and projects. Beside the cultural diversities, which have been accomplished via the Festival CODED CULTURES (www.codedcultures.net) during the "Austria - Japan Year 2009", complementary issues are already applied through socio-technological requirements and requests. Based on the idea of intermeditation between heterofactorial cultures of delineation, CODED CULTURES as an interactional network, festival platform and research unit. We are interested in giving an outlook to creative clusters, questioning how contemporary cultures are shaping the conditions of complex media realities and polylogic artistic strategies in the age of post local and transclassic patterns of society and culture. Artists, researchers and curators in this sense play a mayor role in developing test environments for upcoming cultural emergences in a prototypical sense. One importance is a deeper reflection on creative practices to bridge the gap between expert knowledge and educational approaches within artistic production processes. The sharing of knowledge leads to a communicational challenge and art as an idiosyncratic representation or idea can transform highly accumulated topics from fields like biotechnology, space research, games studies, informatics a.s.o.

Emergence of Artistic-Creative Practices

Enabled by the rise of digital-linked network cultures, a re-organization of creative practices forced by new forms of information, attended by emerging possibilities of communication, connectivity, accessibility and interactivity, is accomplished. These shifts take heterogeneous effects on societies and foment transformations of abstraction models and delineation processes. Artistic projects dealing with these issues are on the forefront to explore ideas and invent prototypical test-runs, questioning these shifts on a level, which marks an inimitable position under the circumstances of complex media realities. Artistic developments and projects based on experimental interventions bring forward a thinking outside the box of standardized forms of cultural self-organization and self-design. In this sense ability-profiles like playfulness, problem sensibility, open-ended learning, hack-ability and error-friendly behavior gain ground in unstable, media-integrated delineation environments. These complexities enable artists to explore projects within different communities and cultures, which cannot be generalized with terms like creative industrialization. Operating in proto-mode of dynamic adaption, artistic communities develop qualifications and framesets to apply uncertain and critical perspectives on established forms of organization and representation. Within these scopes the outcomes of artistic project cultures dealing with these multi-factorial issues have to be questioned concerning their patterns of configuration, formalizing methods and assembly models. Creative practices have to be contextualized within different aspects and references of delineation to explain these combinations within the conditions of exploring creative emergences and their codes and cultures.

Frameset of the Presentation

“CODED CULTURES – Exploring Creative Emergences” presents artistic-creative production mechanisms which are based on digitally linked media-cultural organizations which have actively integrated these into the delineation process of their operating level. Thereby, new options of coherence emerge within further developments related to art / culture / economics / knowledge development / idea aggregation / intermediation a.s.o. Therefore, CODED CULTURES creates a surrounding in which new ways of emerging arts, creativity, theories, projects and ideas can be explored in the field of digital media related forms of creative delineation and arts. The particular aim is to present, discuss and criticize topics which are situated on the intersection of disciplines and activities in order to enforce new potentials of artistic practices and positions. Within this frameset the presentation will give an inside look of the proceedings from the festivals in Japan and Europe. Besides the presentation at the ISEA symposium we have a section at the ISEA exhibition which has been developed in close cooperation with the “Japan Media Arts Festival!”. In total four artworks have been selected by both organizations to intensify the outcomes of the “Austria - Japan Year 2009”.

Acknowledgments:

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Common Flowers/White Out

**Bio-Hacking, Open-Sourcing and Exorcising
GM Flowers**

Introduction

Suntory Ltd., the Japanese drink and biotechnology company, acquired Australian-based Florigene in the middle of the 1990's and along its research on the genetic modification of the pedal colour of carnations (*Dianthus caryophyllus* L.). Suntory and Florigene not only succeeded in creating blue coloured carnations, they also introduced them in 2005 into the general market.

The significance of this is not the bio-technical feat of creating a novel pedal colour – which was not possible through standard breeding techniques – but the fact that this blue GM carnation – “Moondust™” – constitutes the very first instance of a genetically modified plant with the function of aesthetic consumption.

Previously, GM-modified plants like soy, corn, tomato and rice were developed with the aim of serving as human food or animal feed. GM Food has sparked discussion and outrage, often justified, but often the issues are dealt with a gross simplification that distort the issues at stake and try to demonize the technologies involved. Technology, and especially Biotechnology can be considered neither *good* nor *evil*; as with all technologies it depends on the purpose for which they are deployed. By positioning the flowers as an aesthetic product – which is not intended for human consumption – Suntory manages to sidestep the ethical dimensions involved and exclude themselves from the ongoing debate about the possible negative effects of adding genetically modified products and their unknown consequences to the food chain. This projects tries to invite Suntory back into the discussion.



Fig. 1 : Photo: BCL



Fig. 2 : Photo: BCL

Common Flowers: Moondust™ – Blue GM Carnations

White Out builds upon a previous artistic research project called *Common Flowers* in which the blue carnations were obtained as cut flowers and subsequently re-animated using basic plant tissue culture to grow, multiply and technically 'clone' the carnations. The main aspect of ComFlow was to create stable and easily replicable protocol for the recreating and replication of carnations using only ultra-low-cost supplies.

Flower Commons: Bio-sharing, Bio-hacking and Open-sourcing

If ComFlow can be seen as the act bringing moribund cut flowers back to life, *Flower Commons* is the proposed mechanism of distributing the plants and releasing them into the environment. This might appear as a drastic, illogical – even illegal – step. But: before the introduction of the Moondust™ carnations to the markets, Suntory was obliged to conduct thorough field trials to ensure, that the carnation do not pose any risks to other plants, animals and the environment in general. The outcome of these trials were positive, and Suntory was granted permission to grow and sell the flowers in their target markets. Therefore it can not be considered illegal to grow and release Moondust carnations in countries, where Suntory has the right to grow them.

We are further investigating the questions of intellectual property on plants and whether our tissue-culturing and multiplication of plant cells actually constitutes a copyright infringement of Suntory's rights. Can this be considered as Bio-piracy or as an act of freeing a political prisoner?

White Out: Re-engineering the wild type

White Out takes this project a step further by aiming to create a non-genetically modified plant from a previous GM plant. The goal is to exorcise the genes which were introduced to create the blue pedal colour, thus reverting the plant back to its wild type through bio-technological means.

This removal would change the pedal colour back to its unmodified, white state. Several techniques are currently evaluated to explore the extermination of the artificially introduced DNA, including conventional out-breeding

of the un-desired traits, chemically and/or radiological induced mutagenesis and reverse genetic modification.

Conclusion

The project also exemplifies an distributed group effort and investigates whether biotechnological knowledge can be created, acquired and shared within an artistic research setting. This reversal of changes in living organisms and restoration of its original, “natural” state questions the concepts of ‘change’, ‘untainted nature’, and ‘human manipulation’ in the ongoing biosciences in particular and in a wider social context in general.

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P 24

Atmospheres and Ecologies

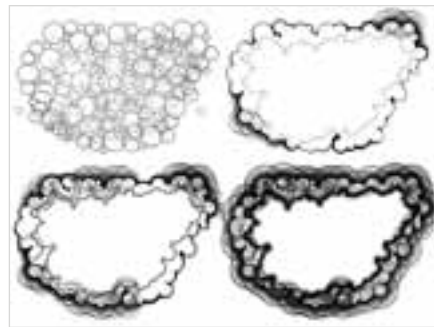
- Alex Haw (gb):
Auto Atmospheres & Artificial Ecologies. Natural
Architecture and Artificial Environment
- Anna Dumitriu, Blay Whitby (gb):
Cybernetic Bacteria 2.0. The Interface of Biodigital Communication
- Andrea Polli (us):
Airspace
- Susan Ballard (nz):
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Auto Atmospheres & Artificial Ecologies

**Natural Architecture and Artificial
Environments**

We humans are all weather men, constantly cultivating and modifying the climates that surround us at every conceivable scale, from the miniature local excretions of our subcutaneous cells to our operatic military manoeuvres in weather modification. Each adjustment acts as a form of architecture – a sheltering moment in our unending project of climate control, submitting the chaos of the external climate to the controlling and organising tendencies of humanity.

**Fig. 1: The Boughs of London** Photo: Alex Haw – atmos**Fig. 2: The CLOUD** Photo: Alex Haw – atmos

Architecture's role in the construction of our inhabitable environment has always been multifarious and ambiguous – functional yet ornamental, liberating yet repressive, physical yet also mental. With the rise and proliferation of digital media technologies, the climate it confronts has expanded far beyond the traditions of rain and heat to a much murkier artificial cloud of our own construction, an ever-evolving physio-cultural soup of data and information utterly eroding the distinctions between the virtual and the real.

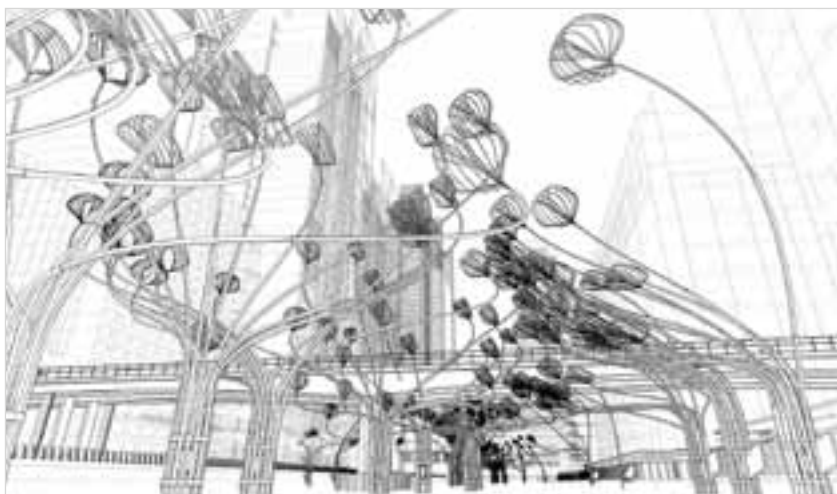


Fig. 3: Sunlands Photo: Alex Haw – atmos

This paper surveys an extremely brief history of architecture's relationship to both weather and media, probing both the climate as culture, and techno-artistic experiments as new weather systems. It surveys the twin scales of our climatic ambitions, from our participation within small-scale ecologies of the internet to our global projects for weather modification across the entire earth. The paper ends with the case study of our own studio's investigations into architecture's relationship to weather, new and old, and our ongoing investigation of the manufacture of artificial climates.

Our collaborative project for the CLOUD for London 2012 explicitly proposes an immersion into the twin climatic streams of the physical and the digital, immersing its visitors in gusts of data whilst they hover above the actual clouds of London, offering an environment composed as much by the particulate matter of man-made acts as sunshine and raindrops. Weather Projection broadcast live solar and satellite data from around the world into an observation space overlooking Sydney Harbour, transmuting the instantaneous data-space of the internet back into a tactile, luminous, immersive, social environment. Sunlands delivered qualitative environmental data back to the barren quantitative landscapes of Canary Wharf, updating unflinching automated universal time with the rich and ever-changing experience of global solar time.

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Cybernetic Bacteria 2.0

The Interface of
Biodigital Communication

Introduction

Cybernetic Bacteria 2.0 is an interactive installation which makes explicit the sublime correlations between human digital communication and bacterial chemical communication. The project was a collaboration between a visual artist (Anna Dumitriu), a microbiologist (Dr Simon Park), a philosopher (Dr Blay Whitby), an interactive media artist (Tom Keene) and an artificial life programmer (Lorenzo Grespan) and was commissioned by The Science Gallery in Dublin as part of their exhibition "Infectious".

The scientist, unconcerned with the ethical implications of his experiment and also unaware of the artists intentions, didn't anticipate that the fusion of the Earth's global bacterial communications network, with that of human origin would lead to the evolution of a novel and chimeric life form. Tainted carbon fused with doped silicon. Dublin became the epicentre of a new epidemic, and the origin of a new kind of contagion able to subvert both biology and technology. What followed was inevitable. What else would a creature with access to: humanities entire knowledge; the genetic toolbox that drives evolution; the sophistication of the pathogen; and intimate awareness of our vulnerabilities do. (Park, 2009)

Description of the Artwork

The artwork combines raw network traffic taking place live around the gallery (including web traffic, mobile technology and Bluetooth), a time-lapse film of bacterial communication occurring (involving two strains of genetically modified (GM) bacteria which will indicate, by changing colour or glowing, the communication taking place) and (generated from those sources) a new Cellular Automata artificial life form.

As a member of the audience approaches the installation a device "sniffs" the ubiquitous computing technology they are carrying, which is continu-

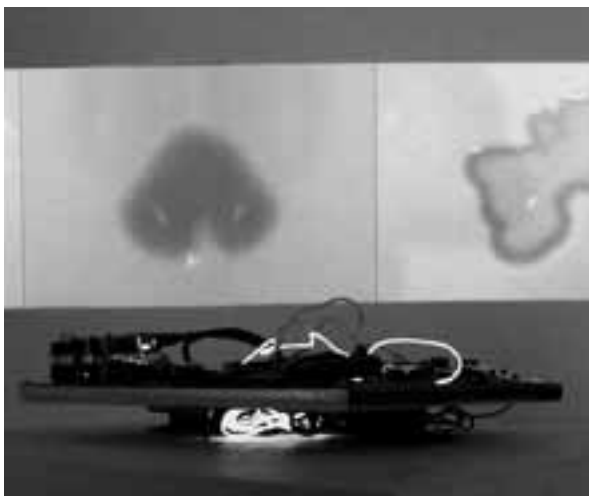


Fig. 1: Cybernetic Bacteria 2.0 installation view Photo: Anna Dumitriu

ally sending out signals such as the IP addresses of wireless devices, the names of Bluetooth devices and so on. In fact people are usually very shocked when the names of devices (often their own names in the case of mobile phones) are displayed in the installation (projected on to the wall). But the malevolent looking device, with its flashing electroluminescent wires and the hacked and soldered mobile phone which appears to have been assimilated into it, is not revealing anything secret, instead it is making explicit all the data we are (usually) unknowingly broadcasting to the those around us.

On a wall a video projection of bacterial communication taking place is displayed. The quorum sensing abilities of bacteria work in a similar way to nodes in the Internet, with a bacterium flagging up a message that says, in effect, "I'm here" to surrounding bacteria, like an organic form of "packet data." Due to regulations surrounding the use of genetically modified organisms it is not possible to easily show the live bacteria communicating in the gallery space as a "Category 2" laboratory would need to be specially built, however this is something that the project group are now looking into, as the experience of watching live bacteria "speaking" is very different to watching a film of it.

For Cybernetic Bacteria 2.0 a purple bacterium called *Chromobacterium violaceum* was used. This bacterium emits and detects a chemical signal. When a population hits a critical density, the concentration of the chemical signal reaches a threshold, which the bacterium is able to detect responding by turning on production of the purple pigment. The white coloured, genetically modified form *Chromobacterium violaceum* CV026 was also used to detect chemical signals and responded by producing a purple pigment also but it cannot produce the chemical signal itself. The other bacterium used was *Serratia marcescens*; it is also able to send out signals but cannot com-



Fig. 2+3: **Cybernetic Bacteria 2.0 installation view** Photo: Anna Dumitriu

municate to the CV026. Colonies of this bacterium are a striking red colour due to the production of the pigment prodigiosin.

The data from the process of bacterial communication was modelled and combined with the “airborne” digital data being “sniffed” by the hacked device. Both elements were used to generate new rules for creating cellular automata. The presence of new pixels affects the global behaviour of the game: as in the original Game Of Life, and echoes the behaviour of the bacteria: each pixel stays on or is turned on if and only if two or three neighbouring pixels are also on. Furthermore, white pixels become, purple if they have a purple neighbour. Red pixels do not affect other pixels colour, but only their on/off state (Dumitriu and Whitby, 2009).

Conclusion and Future Developments

As the biological and the digital are becoming merged and new approaches in synthetic biology are blurring the boundaries between artificial and organic life this work seems timely. New advances in bacterial communication research offer infection control solutions that could replace current antibiotics as we become able to chemically strike bacteria “deaf” by blocking their communication receptors (Bassler, 2010). The artistic investigations will continue and it is hoped that ways to display live bacterial communication in gallery spaces will be found.

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Airspace

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This paper investigates how sound transmission can contribute to the public understanding of climate change within the context of the Poles. How have such transmission-based projects developed specifically in the Arctic and Antarctic, and how do these works create alternative pathways in order to help audiences better understand climate change? The author has created the media project Sonic Antarctica from a personal experience working in Antarctica. The work combines soundscape recordings and sonifications with radio-style audio interview excerpts. This work will be examined in the context of the other sound transmission science and art works.

The Poles are on the front lines of climate change. Known as the planet's refrigerators (DeRosa, 2008), they circulate cold air that drives many of the weather systems in the Northern and Southern hemispheres. The Arctic has experienced unequivocal warming leading to accelerated melting over the past ten years. However, by 2002, the Antarctic became a focus in the politicized mainstream media global warming debate because the research showed that overall the continent was cooling. (Doran, 2008) Lacking an understanding of the science and looking for proof against global warming for political purposes, some members of the mass media began to use the findings of Antarctic climate scientists to claim that global warming was false.

Through a series of interviews with climate scientists in Antarctica, the author discovered that the politicization of the global warming issue combined with the difficulty of communicating the complexity of climate science to the general public has contributed to a lack of public understanding of climate change. Several scientists interviewed by the author expressed the need for a greater understanding of climate change among the general public.

Since the first successful transatlantic radio communication by Guglielmo Marconi and his assistant George Kemp in 1901, radio has contributed greatly to the public imagination of the Poles. For example, within the subculture of the Ham or amateur radio enthusiast, the Poles are seen as the cause of both enhancement and disruption of long-range radio transmissions, and as a coveted goal by the long-distance Ham.

The Internet has also changed the paradigm of broadcast radio to a more distributed model, and media projects that use the Internet to stream sound



Fig. 1: Contacting the South Pole from McMurdo station via radio Photo: Andrea Polli, 2008



Fig. 2: Radio antennae at McMurdo Photo: Andrea Polli, 2008

live from the Arctic and Antarctic have been made in both an artistic and scientific context. Douglas Kahn has said that the annihilation of space and time is the goal of radio (Kahn, 2009), and while these projects transcend a seemingly insurmountable distance in near real time, in content they are firmly grounded in the present time and the political and geographic dimensions of the Earth. Structurally, metaphorically and aesthetically, the projects discussed in this paper re-frame transmission from a Polar perspective, giving a voice to both the people living in these remote locations and the rapid melting occurring there due to anthropogenic climate change.

In conclusion, because of the complexity of the information and the misinformation in mainstream media, there is a need for more direct public communication of weather and climate science. Sound offers a way for scientists to bring their messages directly to the public, by speaking to the public through recordings and radio transmissions and by collaborating on audification and sonification of scientific data. Listeners often respond to sound with emotion and empathy for the scientists' messages. Interdisciplinary collaboration is essential to the work of climate scientists in Antarctica, and radio allows for communication and possibly collaboration across vast distances, especially near the Poles. For these reasons, the Poles offer an opportunity for innovative uses of sound transmission and this sound can contribute to the public understanding of climate change within the context of the Poles.

Cooperation and partners

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Nonorganic Life: Encounters between Frequency and Virtuality in Antarctica

1. LIFE

The BwO howls: 'They've made me an organism! They've wrongfully folded me! They've stolen my body (Deleuze and Guattari 1996, 159).

This paper is not about Antarctica at all. In many imaginaries Antarctica exists as a virtualized yet real utopia. It is a place known through material productions that oscillate between the fictional and the scientific. The discovery of the Don Juan Pond lead scientists towards life formed by brine-derived nitrates (a kind of molecular self-organization by non-carbon sources) and onwards to the possibility of life on Mars. If it is autonomous, can reproduce and evolve, it must be life, mustn't it? Amidst complex computational models, nonorganic matter is not static; it changes and tying it to either nature or culture is impossible. Antarctica is such an object of study. To approach it we create an organism that can be sliced, imaged, recorded and folded. We steal its body so that it may open our eyes to other worlds. Likewise, in art's engagements with Antarctica, something else is formed. DJ Spooky captured the resonant frequencies of ice in *Terra Nova: Sinfonia Antarctica* (2008). In *The Journey that Wasn't* (2005) Pierre Huyghe lured a mythical creature to reveal itself to a sound beacon placed on an ice flow in apparently uncharted territory. Andrea Polli's *Sonic Antarctica* (2008) shows data to be always incomplete as field recordings and audifications are placed alongside interviews with climate scientists. The human inhabitants and their tools mark something specific about the media ecology that is Antarctica. These works suggest that our fascination with Antarctica derives from a need to distinguish differences between unstable materials, objects and behaviors – the spaces between contain evidence of life.

2. ECOLOGY

They discovered that there was another world on this planet, where the cloudy sky produced a milky green light that reflected off an icy ground, uniformly illuminating the air around them as if the landscape were glowing in the dark. It was a landscape without matter, only light (Huyghe 2005).

A second definition of nonorganic life extends to ecological systems subject to flows of energy that include nonorganic matter (DeLanda 1992, 133). Antarctica holds an ecological intensity that heralds a terrifying shift in the relations of nature to technology. Within its reality we map the very movement of the earth's climate. Phil Dadson records soundscapes, finding strange human inhabitants amplifying echo walls and polar winds playing pylons like a giant Aeolian harp. Dadson's Antarctica is not passive. Every element of *Polar Projects* (2003) is a functioning part of the Antarctic ecology, including pragmatic man-made additions. Ronnie van Hout recounts the emergence of an Antarctic horror in *the thing* (2009). There is nothing sublime about this figure dressed in all-weather gear and held within a secure containment room. Van Hout reminds us that Antarctica is an assemblage of nonorganic life mapped and traced by human use of media.

Guattari extended definitions of ecology to include human subjectivity and social concerns. DeLanda turns this toward a geological ethics (2002, 153). Morton argues that aesthetics play a crucial role in understanding the need for a dark ecology – an ecology without nature (2007, 2). In each of these definitions ecology is born from dissonance, including wider tensions of different material forces be these human, spatial or cultural. Antarctica is certainly formed from dissonance. Reframing Antarctica involves the recording of discrete states that adhere to the moment between science and fiction; and that engage complex mixtures of geological, biological, social and linguistic constructions.

3. MATTER

A given material may solidify in alternative ways (as ice or snowflake, as crystal or glass (DeLanda 2000, 16).

What is it that gave us the image of Antarctica as a pure white world, an inhuman and technologically free territory, inhabited by penguins? To address the problematic narrative of Antipodean magic and mystery we need to question the real fictions generated by technology. Joyce Campbell's *Last Light* (2006) employs anachronistic photographic techniques to chart looming contemporary phenomena that will have enormous and uncharted effects on our collective future. It is an engagement with the interchange of matter. The ice speaks. Antarctica remains geographically distant, silent, and yet visually close.

There is a metabolic process whereby Antarctica coordinates matter, energy and information. It formed from molecules that not only maintain the earth's balance, but filter and reflect back larger possibilities, longer histories. Reading the ice melt is a bit like consulting the oracle, the ice contains distributed knowledge of place, time, history and heat. As sound travels across and through the frozen environment frequency becomes a tool with which the great white expanse can be mapped. Dadson, Spooky and Polli make visible the magic of sonic forces to construct spaces for mountainous encounters. Campbell, van Hout and Huyghe seek a visible engagement with intangible spaces made real. All these artists travelled to Antarctica. Their works reflect a nonorganic environment disturbed and somehow remade by technologies of sonification, visualisation and exploration – science fiction as real as life on Mars.

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P 25

Media Spaces/Personal

- Cym (Simone van Groenestijn) (at):
Aus Alt Mach Neu. Recycling Arts

- Linda Duvall (ca):
Transparency of Digital Manipulation or Not. Discussion of
Where Were the Mothers? Video Installation

- David Green (ca):
Rupture

- Kaspar Wimberley (de):
Homezone

- Ina Conradi (sg):
Digital Imaging in Singapore – Internal External

Aus Alt Mach Neu – Recycling Arts

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Some years ago I started creating wallets from empty Tetrapak packages. More than ten years I had been working with computers, but now I was making a living from creating products from trash, completely without the use of a computer. I developed a whole range of products: wallets, notebooks, lights, clocks and more, all made from empty supermarket packages.

At that time I was living in a small village on the countryside, where I was transforming an old farm into an art center. In these new surroundings there was only little interest for my qualities as a webdesigner, but the people around me were very enthusiastic about my recycled objects. When they saw my wallets made from empty milk cartons, they would say *'That's what I call true recycling!'*. They would call me a recycling artist. From now on, I would call myself a recycling artist.

But what exactly is a recycling artist? To find a definition for 'recycling artist', we should first find out what is meant with 'recycling'.

Recycling is cool, trendy, hip, modern, necessary, political, ecological, sustaining, creative and fashionable. Recycling is one of the keywords of the 21st century. Recycling is everywhere. Recycling is a way to save our planet. Recycling is a way out of the financial crisis. Recycling is *'being aware of the environment'*. Recycling is *'not knowing if the piece of trash in your hand should go into the red or into the blue container'*. Recycling is *'carefully removing the small piece of paper from the teabag and throwing each part into a different trash can'*. Recycling is a logo with three arrows, designed like a triangle, going around in a loop. Recycling is a way of living.

The Wikipedia entry of the word 'Recycling' has more than 55.000 characters. To give you an impression how much that is: this article has less than 5.500 characters. If Wikipedia needs an article that is ten times longer than this text, then there is no need to explain here what exactly 'recycling' is.

However, there is one important aspect of recycling that I would like to explain. In the original use of the word, 'recycling' means *'to break down the object into raw materials and use them to create new materials, which can be used to create new products'*. Old paper is recycled into new paper. Old aluminum cans are recycled into new aluminum, which can be used to create new cans or other things made from aluminum.

Often we think that the recycled product is not as good as the first, original product. We generally think that recycled paper doesn't look as good as

newly made, bright, white paper. The form of recycling where the recycled product has a quality less than the first product, is referred to as 'down-cycling'. Opposite to 'down-cycling', there is 'up-cycling'. 'Up-cycling' is the process where the new object has a value that is higher than the materials it was made of. When artists use old, found materials to create something new, the value of the work is almost always higher than the value of the materials that were used. When artists create a work from trash, it is almost always an example of 'up-cycling'.

When we use the word 'recycling', we often refer to a process that is called 'reusing'. We are 'reusing' an object many times, before we finally throw it away. But eventually we will throw it away.

When recycling materials, there is a cycle of things. Old products are broken down and made into new, raw materials. These materials are used to create new products. For example a glass bottle is used, thrown away, broken down into pieces and made into a new glass product again. This pattern can be repeated many times. Recycling is a loop.

When I think about my art projects, this loop has always been an important element of my work. I am always trying to turn things into new, different things. For many years I have been creating virtual spaces. These virtual spaces were usually a reconstruction of real spaces. In my installations I would connect the real space with the virtual space and connect the virtual space with the real space.

In this way a kind of loop occurred, where the visitor would cycle from the real space into the virtual space, back again into the real space, back again into the virtual space, and so on. My main interest at the time, was to mix the virtual space and the real space together. In this way a new space would emerge, a space that I would call 'the third space'.

If I look again at the definition of the word 'recycling', how I put it at the beginning of this article, then what I was doing at that time, was exactly that: creating a loop of the world around me. I was turning real images into virtual images, back again into real images, back into virtual images, again and again. And every time the total image would get a little more blurred, because the different layers would mix together. At the same time, every time the image would get more rich, because more and more layers of information would mix with each other.

You might say now, if you call that 'recycling' then anything can be recycling. Yes, you are right, anything can be recycling. In the way we use the word 'recycling' these days, more like 'reusing', 'copying', 'sampling', anything can be recycling. And when I look at it very strictly, the one thing I do that does not fit under the definition of recycling, is creating wallets from empty milk cartons...

<http://www.recycling-arts.com/>

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- <http://en.wikipedia.org/wiki/Recycling>

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Transparency of Digital Manipulation or Not

Discussion of Where Were the Mothers? Video Installation

This paper will address the significance of the ability of digital media to alter and transform primary experiences in ways that may improve, misrepresent or interfere with the viewer's reception and understanding of the original material. A secondary question is that of ownership and authorship when the translation involves a creative process. These ideas will be considered through a discussion of my video installation *Where were the Mothers?* (2009) in which people who have taken alternative life paths worked with a professional musician to write one song about the participant's mother. This video installation allows viewers to explore both transparent and more invisible shifts from the original material.

This project presents the complicated narratives of people who have had run-ins with the law, lived or worked on the street, dealt with addictions or participated in illegal street gangs. Each of these participants collaborated with a professional musician to produce an original song about their mother. I commissioned professional musicians working within a variety of musical styles to work with the participants on a one-to-one basis. That musician assisted the participant in shaping the composition and in recording it. Condensing a lifetime of stories into three minutes of music both compresses and alters the original narratives.

Once the musician and the participant enter the recording studio, a second translation occurs through the magic of the digital manipulation that occurs within that process. In the resulting video installation I make visible all parts of the process including the evolution from the original voices, stories, and instruments to the finished professionally produced song. A second layer of complication results from the staging of the encounter between two strangers – in this case the participant and the musician. Thorny issues of roles and authorship emerge. Who really shaped each song, and what preconceptions were brought to the interaction by each party?

Where Were the Mothers? is a multimedia exhibit that explores the uneasy fluidity of truth, and reveals the contradictions in trying to assert a singular or absolute narrative. I will present excerpts of this project during my presentation.

Rupture

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Our memories are fragmented and incomplete. We create narratives to bridge the gaps between actual remembered occurrences and imperfect memories. Sometimes the narratives constructed distort and replace the memories that we originally had, and knew to be true, or at least relatively true. On a national scale, these narratives can lead to the creation of myths and fables, a process both creative and destructive. (Said, 2002, 245) On a personal level, these narratives leave us with a mash of overlapping truth and fiction.

Within a geological metaphor, this mash could be visualized by a series of overlapping tectonic plates, constantly moving in slightly different directions, and abrading against each other. A process that resembles the fragmentation and fracturing the earth undergoes during the occurrence of the natural processes we call earthquakes. The earth, as it undergoes the stresses of the constant movement of the underlying mantle leaves traces (memories) of its past. It is a trace of violence, of disruption, *Rupture* creates a digital record of these disruptions. On the screen, a map of the world slowly emerges, displaying the records of earthquakes that



Fig. 1: Earthquakes over the last 47 years.

have occurred during my lifespan. Each earthquake appears on the screen as a glowing spot of light, the devastation of material trauma converted into something ephemeral and star-like. [Fig. 1]

This project is available on a mobile computer (iPhone) which is always connected to a data network. It draws on the piece as a space of personal

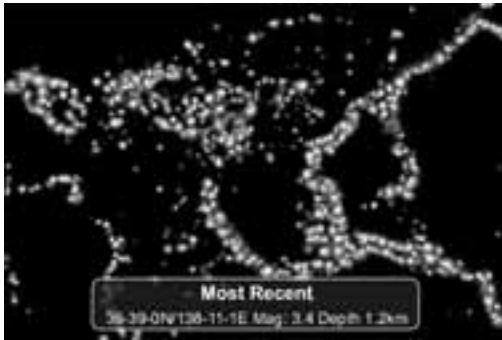


Fig. 2: Screenshot of the app running on the iPhone.

interaction, where the large scale processes of the earth can be translated into the space of the iPhone: intimate, and scaled to the size of the human hand. In this intimate setting, the viewer will be invited to share a small snippet of their own memory (perhaps triggered by something I wrote) that will be incorporated into this overall piece. [Fig. 2]

Interacting with the visualization of the earthquakes, will allow the user to recover a collection of memory fragments (audio, images, video). Each earthquake will contain, instead of displacement and metamorphosis, a memory I have from the same year. Whether or not the memory is a true representation of events as they happened would be impossible for anyone to tell – myself included. All memories are subject to an editing process – as we determine the shape of the past, things we believe to be true (or want, or need to be true) are incorporated into stories of our lives. With the earthquakes that occur early on in my life, the written memories will be the most suspect – perhaps the result of things I have been told happened, perhaps things that did happen but not at precisely that time. The trace of the earthquake becomes a site – in the archeological sense – an (im)perfect record of my past. A record that can only be interpreted and can never be complete. As the work grows, my own recollections become only a fragment of the entire collection and will become a site of a global collection of small fragmentary stories that simultaneously reveal and obscure meaning. History becomes unclear, jumbled, and it becomes the impossible job of the archaeologist (or geologist) to sift through fragments and glean a complete narrative.

Rupture (mobile edition) is important in that it takes my very personal work and opens it up to participation by a larger community. Anyone with an iPhone will be able to take part and by taking part, they will help build a cache of memories and stories encompassing the past 47 years of my life and the Earth.

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Homezone**Kaspar
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Artistic Director, Independent Artist**Interactive Documentation/Performance Lecture/
Experimental Cartography**

Homezone is a walk around the perimeters of my 'Homezone', an area in which I can make cheaper telephone calls, defined by the German O2 mobile telephone network and based on my residential address. On the course of this journey I have been documenting what lies directly outside and inside my Homezone, the familiarities and the foreign.

I have been collecting objects, thoughts and images from the people and the places that are encroaching into my territory or sitting on my doorstep, piecing together a (sometimes irrational) narrative that documents this journey and the way in which we perceive our neighbouring environments. This experience has been placed alongside theoretical research, and a variety of interviews with architects, historians and politicians that address the socio-cultural and political implications that surround the project.

At times I have been letting the site interfere and inform my own perceptions, at other times I have interfered with the site, initiating a series of interactive interventions along this invisible boundary. I have asked pedestrians entering my Homezone if they would like to join me for a cup of tea, or to brush their feet on a doormat, I have physically marked out the perimeters of my territory onto the streets using oranges and garlic, or chalked out the questions that asylum seekers are expected to answer if they would like to live in Germany. And so on.

This narrative or scrapbook of evidence is then performed, or presented, as a low-tech response to a web of technological infrastructures.

Homezone has been presented at the Arena Festival in Erlangen, at a variety of locations in Stuttgart, and at the Hidden Cities Symposium in Plymouth (UK).

They would like you to leave by 10 o'clock
 If you have children they might ask you if you have public liability insurance
 They want to show you the pearls
 They know that you are coming with high expectations
 It's an open house
 They believe strangers are friends you don't know



Fig. 1: The O2 Map of my Homezone in Stuttgart

They are not a hotel
 They expect you to feel at home
 They don't have any expectations, they are just happy that you are there
 They will treat you like queens
 They couldn't do this all the time, as that would be too stressful
 There are just the same rules that always exist
 That you leave the place as you find it
 That you are not too loud
 That you behave like a normal person
 They don't actually like having to get everything ready for you
 They hope that you will not dominate
 They have thought carefully about whom you might like to meet
 They will try to be open and relaxed
 They would like to keep a bit of distance
 You shouldn't feel at home but you should be yourself
 They will make themselves feel good in order that you feel good
 They will try to show you that they are happy that you are there
 They rarely have guests
 They hope you can keep the conversation going
 They hope that you feel good, and expect you to return the compliment
 They will be assessing your sex, social standing and age
 They will not invest a lot of time building friendships, unless you are an astronaut

CIRCLE No.1

This circle has a diameter of 2,3km. The topography of this circle, if you cut it out, might resemble a failed sponge cake, or the side of a crater. The hedges, fences and gates around the outside of this circle are noticeably higher. Over 25% of the people living in this circle are classified as foreigners. A large proportion of these live next to the four main roads.

I say hello to an old lady and she calls me a 'Schmüserle' (flirt).



Fig. 2: Collage

CIRCLE No.4

Greeting you as you enter this circle is a group of people, mostly older men, seated around a small dried-up fountain. They sit here for 7-8 hours a day, and will happily point you in the right direction. Each person has an allocated space on one of the benches, a Stammpplatz. One of the benches is always empty.

A few metres away, just outside this circle, somebody leans out of the window and spits down onto the street.

In the Maultaschenfabrik they are still hiding the meat from God.

CIRCLE No.6

There are 13 pubs, and one public drinking fountain.

There is one gay brothel.

There are as many empty shops as there are tax advisers.

As many butchers as there are banks.

There are 19 hair and beauty salons, one of which is for dogs.

If you want to live in this circle you will be given a map and free bus travel for a month.

Somebody has marked this circle with a humming hole. I stick my head into the hole that has been cut into the stone and hum. My body vibrates, like a glass of water having a finger run around and around the rim.

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Digital Imaging in Singapore – Internal External

The following is to present artist practice pursued through the process of research at the School of Art Design and Media, Nanyang Technological University, Singapore. The work delves into exploring alternative methods of artistic expression by using novel synthetic image creation technologies and their evocative possibilities. With a focus on digitally generative systems and techniques for integrated image generation, converging painting methods with digital technologies and integrating traditional art methods and materials, the emphasis is on expanding the limitations of the digital medium, abstract painting and other forms of visual imagery, striving to achieve greater creative levels.

The resulted art works cover broad mode of expressions ranging from spatial imaging for large-scale built installations, to 3D stereo animation and online 3D virtual environments.

New Artist Palette: Algorithm

Today, sophisticated electronic techniques allow us to find unexpected formal aspects in the depths of material. Artists are selecting, highlighting, and thereby conferring form upon the formless and setting the seal of their style upon it using digital code. The newly developed artistic palette of algorithm brushes originally drew inspiration from science, nature and mystical thought. The resulting images question the primacy of representation and describe invisible forces and processes that lie behind nature and its ephemeral phenomena. The main goal was to crystallize that connection between natural arbitrary flux and spiritual existence. Following the rhythm of continuously moving, unfolding and floating geometries, an endless process of painting evolves.



Fig. 1: 'Natural Systems: Decomposition of Blue', Detail, Digital Painting, 118 x 84cm
 Photo: Ina Conradi



Fig. 2: Public Art Proposal for Esplanade Exterior: Elixir Of Redness, 14 Panels
 1100x227x200cm, size variable, tempered glass, Singapore 2009 Photo: Ina Conradi

Abstraction in Visible: Singapore Public Art Proposals Series

These visual explorations transcended from the artist's studio into an urban landscape to create new aesthetic encounters through conjuring visionary objects and familiar environments in public settings of Singapore. In visualizing art works for Singapore's sites developed was new aesthetic, contributing to Singapore's effort towards establishing itself as a cultural industries metropolis, a renaissance city that uses culture to re-position its international image as a global city for the arts.

Contemporary painting practice is not taking advantage of integrating traditional painting methods with available digital prototyping to create high impact artworks in public spaces. Usually the outcome of digital painting is dull digital print that lacks the physical presence interest and excitement of traditional art forms. To avoid that, parallel with digital visualizations and prototyping experimenting with a wide range of numerous uncoated flexible and rigid substrates was possible with the help of specialized large format UV curable flatbed inkjet printers.



**Fig. 3: 'Internal External' digitally generated still images, backlit panels UV VUTEk
© QS2000 100 sq meters, video projection, 3D computer animation; Art Installation,
Post-Museum, Singapore, 2009 Photo: Ina Conradi**

Internal External

Drawing on the ideas of the merging of digital painting and animation Internal External aims to craft immersive, interactive and 3D animated installation using digital images, seeking innovative convergence of art and technology to transform spaces into novel experiences. Through an integrated design and fabrication practice an experimental built environment is created that enhances and celebrates the potential for social interaction through sensation and physical engagement.

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P 26

Public Interventions

- Owen Mundy (us):
Automata: Counter-Surveillance Using Public Space

- Jonas Fritsch, Christoph Brunner (dk):
Balloons, Sweat and Technologies: Urban Interventions
through Ephemeral Architectures

- Georg Klein (de):
Don't Call It Art! On Artistic Strategies and Political Implica-
tions of Media Art in Public Space

- Georg Dietzler (de):
Radical Ecological Art and No Greenwash Exhibitions

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Automata: Counter-Surveillance Using Public Space

Automata is the working title for a counter-surveillance internet bot that will record and display the mutually-beneficial interrelationships between institutions for higher learning, the global defense industry, and world militaries. The proliferation of automated spying techniques on the part of government and corporate institutions has created an unequal flow of information. This bot acts to subvert these techniques in the most relevant way – by making data about the confluence of economic and violent power visible to the public at large for research, activism, and examination.

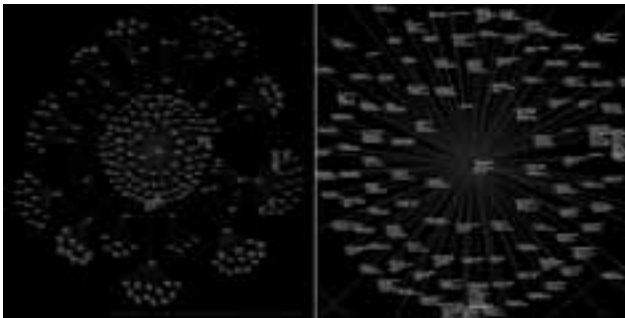


Fig. 1: lockheedmartin.com_sitemap_20091214_red {cc} Owen Mundy ~ owenmundy.com

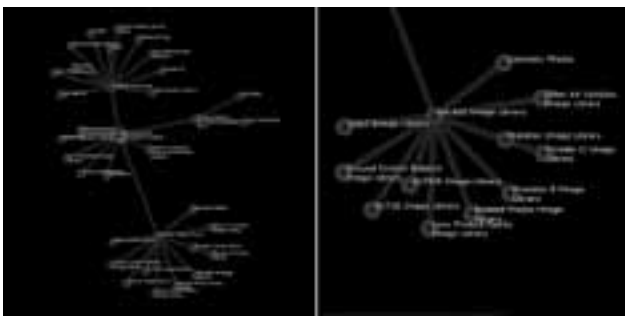


Fig. 2: ga-asi.com_sitemap_titles_black {cc} Owen Mundy ~ owenmundy.com

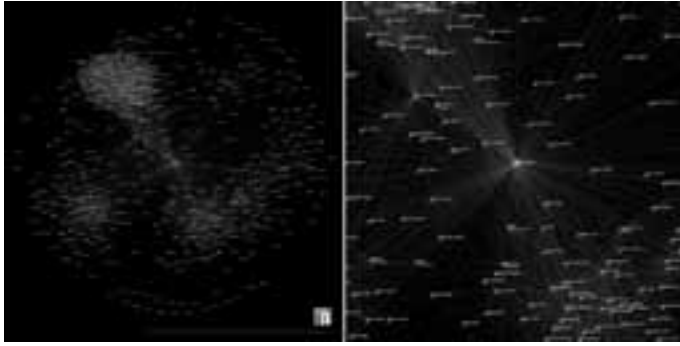


Fig. 3: Give Me My Data multi-network visualization

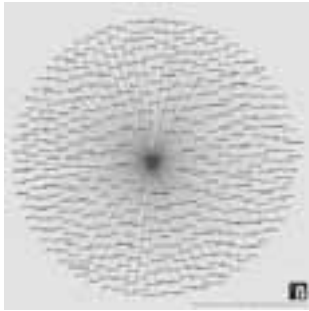


Fig. 4: Give Me My Data network visualization

Automata is not simply about collection and visualization, but a way to enable an understanding of concentrations and relationships of power for the public as well as researchers, through a website, searchable database, and images depicting those relationships.

Recent cuts proposed to portions of the defense budget show how enterprising defense contractors strategically placed the manufacture of defense items in every state to ensure it is embedded in our cultural fabric. Automata intends to investigate the strength of the relationships between our material culture and invisible violent outcomes by making these ties public.

A related project, Give Me My Data, is a Facebook application that helps users reclaim and reuse their facebook data. According to Facebook's Statement of Rights and Responsibilities:

You own all of the content and information you post on Facebook, and you can control how it is shared through your privacy and application settings.

Give Me My Data helps users exercise this right by re-presenting data in easy to use formats.

While seemingly utilitarian, this project intervenes into online user experiences, provoking them to take a critical look at their interactions within social networking websites. It suggests data is tangible and challenges users to think about ways how their information is used for purposes outside of their control by government or corporate entities. <http://givememydata.com>

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Balloons, Sweat and Technologies: Urban Interventions through Ephemeral Architectures

Society of Molecules was orchestrated by the SenseLab as an emergent and internationally distributed micropolitical event for research-creation carried out in several countries during the first week of May, 2009. This paper reports from the Montréal-based molecule named the Lack of Information Kiosk. It aimed at bringing attention to urban mobilizations on the frontier-land between a traditional working-class district (Parc Extension) bordering a bourgeois neighborhood (Outrement) in the northern part of the city. Université de Montréal has bought the 56.0000 m² space between these two districts to develop their future campus literally closing off access from Parc Extension. The quotidian appropriations of this space (by walkers, dog owners, homeless) confront the multiple layers of a space that suffers from a lack of information. The focus was on this ever-present lack of information in both governmental and everyday dialogues about the future of the physical and social spaces.

The molecule moved its activities to a vacant lot in the area of intervention. Inhabiting this piece of land in the actual urban setting started feeding into the creative processes of active interventions into the urban fabric. The lot provided a new set of affordances for activation of the area and one might argue that it soon became a physical as well as conceptual middle for the future interventions. The site itself formed the generative ground for us to experiment as “molecular collective” with the urban environment. The lot ended up hosting an extensive range of participatory and poetic urban interventions aimed at re-activating the neighborhood in the form of relational BBQs, urban camping, a lack-of-informational kite-building workshop, nightly dérives, photo-walks, a lack of information board and the low-tech creation of ephemeral architectures using LED-floaties.



Balloons, Sweat and Technologies emerged out of an attempt to work with low-tech technologies in an urban context, where no power outlets or wi-fi existed. The intervention consisted in crafting so-called LED-floaties (helium-balloons containing LEDs in different colors) and relating them to the lot and the surrounding area in experimental ways. The project started out investigating the materiality of the balloons themselves, moved towards employing the balloons to build an ambiance in a gazébo at the lot, and ended up using the balloons in combination with long-exposure camera functionality to create ephemeral architectures at the nearby rails. The digital technology entered through the backdoor in the form of cameras documenting the process, adding an extensive durational layer to the temporality of the event. The situated and in-the-moment caring for the material objects (the floaties) and the future envisaging of possible outcomes of the documentation (as photographs) both affected the interaction with and displacement of the balloons. As such, they continuously provided new conditions of emergence and enabling constraints resulting in unforeseen and interesting conceptual and material movements.

One of the intervention's particularities related to the fragility of the balloons which became very palpable indeed. Developing feelings and deeply caring for the balloons was a big part of the experience, especially when we decided to hand the balloons out to the people participating in the molecule. The idea of taking the balloons for a walk and tie them to the rails seemed pretty peaceful. In retrospect, distributing the balloons to everybody who went on the *dérive* was maybe interesting as a collaborative action, but hardly the safest way to transport the fragile floaties on a windy night. The cool and calm ambiance of the floaties in the gazébo was torn into pieces and replaced by escapist balloons soaring off into the night and sudden

auditory bursts of explosion, killing the precious inflatables. Finally, only a handful of the balloons survived, but the memory of the ones lost in battle lives on through the pictures from the nightly event.

The documentation of the project takes the form of a slideshow of some of these pictures. What one sees in this film is the result of struggling with humans and non-humans on a couple of rainy and windy nights at the lot. The final results hardly capture this struggle as it formed the process and the heartbreaking departure of most of the balloons during the *dérive*. Instead, it shows the non-visible materiality of the event as a result of the digital post-processing, retro-activating the event through the documentation.

By addressing the fragility and multiple uses of urban marginal yet negotiated spaces *Balloons, Sweat and Technologies* experimented with analogue technologies to create ephemeral architectures that bring attention to the micropolitical and metastable relations between technologies, cityscapes and interaction.

Georg Klein (de)KlangQuadrat – Office for Sound
and Media Art Berlin
Artist, Director**Don't Call It Art!****On Artistic Strategies and Political
Implications of Media Art in Public
Space**

In contrast to art, theatre and concert spaces – where virtually everything is allowed but no longer exploited, the artistic environment guarantees benevolent understanding or art makes no impression on indifferent tolerance – in public space, including media space, social confrontation is a given. An artist is at the mercy of societal dynamics, between economic, social and political interests, and soon encounters sore points if his art is not devoted to mere urban ornamentation. Whereas only people interested in art go to art spaces, public space has the most diverse audience imaginable, from the unemployed to stockbrokers. The reactions of an audience whose everyday routine is confused, disturbed or stimulated are thus equally varied.

I started with art in public space in 2001, leaving concert and gallery spaces, and my concept of making art and music changed completely; the starting point was no longer an artistic “idea” but situational research. Looking around in the streets, watching people, following traces, discovering spaces, I slowly get a feeling for a place, a city or even a country, finding my artistic point of view, my subject, my space and my substance to work with. By focussing mainly on spaces of transition with a certain suspense, I often find a hidden conflict, a social and aesthetic tension which I follow up, collecting sounds, images, objects and texts. Finally, in a site-specific installation I create an aesthetically “condensed” situation by transforming a real situation.

In 2006 I visited a GDR watchtower at the former Berlin Wall. Looking out from the observation platform, I developed a feeling for the work of the soldiers, with one of whom I got an interview, and did further research on border watching worldwide.

The project “turmlaute.2: the watchtower” consists of two parts: the installation and the publicity. Both parts were used to establish a fictitious organisation, the *European Border Watch* (EUBW), inviting EU citizens to actively monitor European external borders against illegal immigrants on their home PCs – border watching as a social Internet network.



Fig. 1: Entrance of the EUBW watchtower with blue EU flags and "George Klein, Executive Manager EUBW" as guide

The tower was converted into an EUBW registration centre with an audio-visual and interactive installation demonstrating new surveillance technology modelled on Google Earth. The public and international press were invited to the opening of the EUBW tower by email and fax, with a link to our official-looking website europeanborderwatch.org, which explains the goals and technique of web patrolling for private users and includes registration and feedback forms. Responses were collected and pasted into a comment book that was made available in the tower.

On-site visitors to the tower were welcomed at the entrance on behalf of the European Border Watch and given a green informational handout with a web patrol registration form on the back and a special guided tour. On the first floor, the *visual showroom*, an EUBW guide explained the satellite webcam system and the organisation's goals to the visitors. The dark room had small embrasures as windows, with screens showing webcam images of ostensible border events. The visitors were invited to lie down on the camp bed and choose a surveillance area from several EU external borders.

The second floor, the observation platform, housed the *acoustic control room* with interactive surveillance equipment, a basic sound and the voice of the interviewed soldier (more details see Klein, Georg, 2009). Visitors were asked to register on the ground floor. The guided tour provoked intense discussions, and at times we had to expose the hoax to save ourselves. Some people were extremely upset, others joined the EUBW and registered. During the four-week run there were more than 1,300 visitors to the tower and of course many more to the website.

Working in public spaces particularly necessitates thinking about how I reach my public, attract it to the work, hold it and let it go again. There is a

wide range of possibilities in public interventions, interactive installations and participatory projects, and I have worked with various forms over the last ten years.

The watchtower project was my first experience with a project I did not announce as “art.” The publicity for the installation became part of the artistic work and was fully integrated into the fake. Visitors became part of the game, which they often took very seriously, and began to think completely differently than they did when confronted with “art,” which was the point. They had to behave, to react in a real situation, although it was artificial, leading them to think more politically. In an art context, even art in public space, everyone knows the rules of the “game”; everyone respects the freedom of art. Normally provocation in this setting only evokes smiles. Breaking the rules by denying the artistic character leaves the visitor uncertain and irritated, in a mental and physical open space.

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Radical Ecological Art and NO Greenwash Exhibitions

Radical Ecological Art and NO Greenwash Exhibitions – seeding ideas through creative action will present a showcase of artists that bring together culture and sustainability and examine new models for action. Advanced forms of ecologically sustainable living models are being put on the spot.

The talk introduces into the fields of trans-disciplinary cultural practice, cooperative work between artists, researchers, scientists. Artists, inventing creative ways to protect our natural world and living cultures through applications of ecological systems theory and aesthetics; using cross-disciplinary tools (art, psychology, creativity, scientific knowledge, political savvy, marketing) to design new ways of living with the least negative impact, social and environmental responsibility. Artistic practice aims to offer interpretations and models of thinking about the natural world, suggesting an ecological and ethical perspective that help to promote a sustainable future. Furthermore, people in different disciplines are seeking ways to make what's good for our communities and ecosystems work better and resonate more effectively. All expressions of visual and living cultures can be part of Radical Ecological Art including storytelling, theatre, film, music, etc., limited only by it has to be art that matters.

For experts in this field well-known mostly longterm multi-annual process-based projects will be introduced. A shame very few which rarely reach a wider audience. In the last couple of years art and ecology exhibitions became trendy, a must, even few Biennales announced putting a focus on a label called eco-art. Arts linked to ecology still is not mainstream, more hidden, art of „outsiders for insiders“, Radical Ecological Art, art that matters; arts for a change towards future visions, utopian models, art that has an impact on the environment. More sophisticated artists may not be included in exhibitions which are mostly curated by curators who rarely took a chance to deepen their knowledge. Not having or taking the time to research properly too many are mixing up Landart, art in nature, art with nature, environmental art, and know little about what is the state of arts linked to ecology.



Fig. 1: Everyman's right 2003 Photo: Ritva Kovalainen and Sanni Seppo

After a brief introduction about my self-decomposing laboratories, self-decomposing architectural sculptures for cleaning up industrial soil contaminated by PCBs by oystermushroom cultures, all together sort of an „Architecture of Senses.“ I will present works from George Steinmann „KOMI – A Growing Sculpture Forum for Sustainable Forestry/Russia 1997-2006; Ritva Kovalainen /Sanni Seppo (FIN) “The end of the Rainbow – where did the forest disappear?” The End of the Rainbow is a visual research on the change in northern woodland scene and forest identity. In last 50 years intensive forestry has changed both the landscape and the relationship to the nature; Jackie Brookner „Magic Island the first process-based public art project in Finland, a bird nesting and water restoring Biosculpture cleaning a waste water pond“; Salo City/FIN supported by the Finnish Nessling Foundation. Peter Fend „OCEAN EARTH – ALGAE-PROJECT is about harvesting algae for bio-gas production“; Tim Collins/ReikoGoto „Nine Mile Run“ multil-annual community reclamation projects of the coal mine and steel production sites in Pittsburgh/PA landscape a bit similar to the Ruhr-Valley.

My presentation is meant to be more than an academic presentation as my Finnish colleague expressed in a wonderful, poetic way:

Art has the potential to awaken our feelings and move us. A love of nature and intelligent ideas can make people call for change and take action to protect our natural environment. Change requires giving up old ways, which can be painful. Art can provide relief and help with the birth of the new. I hope that the Green Art Halikonlahti exhibitions will have a definite impact on people's feelings. (Tuula Nikulainen) <http://www.halikonlahti.net>

A great source introducing green art is ecovention:
<http://www.greenmuseum.org/c/ecovention/>

P27

Mapping Virtual Skies

■ Max Neupert (de):
Satellite Zodiac

■ Alejandro Duque, Luis Bustamente (co):
Unsigned

■ Laura Plana (es):
Database Visualizations, Mapping and Cartography: Genealogy of
Space. Visual Representation for Knowledge in Art

■ Jihyun Kim (kr), Andrés Colubri (ar):
ITCH. Individual Technology/Community Hacking

Max Neupert (de)Bauhaus-Universität Weimar
Artist
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Stars are decorations of the night sky. The contemporary cultural framework has always provided a way of interpreting them. This pattern interpretation led to the so called modern (western) constellations. The majority of which depict animals (Aries, Aquila, Taurus, Cancer, Leo, Scorpio, Pisces, Canis Major, Canis Minor, and so forth), followed by Roman, Greek and Babylonian mythological characters (Andromeda, Aquarius, Auriga, Hercules, Pegasus, Perseus, Orion, Virgo and others). The third biggest group of constellations are man-made machines – pieces of technology like the arrow (Sagitta), the triangle (Triangulum), the balance (Libra) and the lyre (Lyra). But there are also more curious ones like a ships keel (Carina), poop deck (Puppis) and its sails (Vela), an air pump (Antlia), a pair of compasses (Circinus), a carpenter's level (Norma), a mariner's octant (Octans), and compass (Pyxis), a eyepiece graticule (Reticulum), a telescope (Telescopium), a pendulum clock (Horologium), a microscope (Microscopium), a chemical furnace (Fornax), a sculptors chisel (Caelum) and a painter's easel (Pictor). Those constellations were given names by the French theologian and scientist Nicolas Louis de Lacaille (1713-1763) during an astronomical expedition to study the southern heavens at the Cape of Good Hope. When Lacaille looked up to the nightly firmament he saw the high-tech equipment of artists, craftsmen, seafarer and scientists of his time. Like a Rorschach test he made his sense of the patterns in the sky according to his conditioning.

If the stars would miraculously rearranged themselves one night – how would we name the new constellations? Wind generator, Pedelec and iPad?

Since a majority of the world's population now lives in cities, starry nights have become increasingly difficult to witness. One would probably have better chances with a tabloid horoscope in the big city. Astrology claims to speak to us but our everyday life is dominated by artificial heavenly bodies. The times have come to an end when stars meant guidance and orientation. Navigation and positioning is the domain of man-made orbital vessels. Guidance systems from missiles to cars use satellites to triangulate their positions. Weather forecasts are based on remote satellite imagery. Communication and television is transmitted over satellite dishes. We know the size of the ozone hole just as well as Iranian nuclear sites from a satellite's perspective. Every day satellites play a part in the modern person's life – yet



Fig. 1: Satellite constellation

for the most part they stay invisible and their names and constellations remain obscure.

Satellites reflect sunlight to the earth rendering them visible to the eye just shortly after sunset, when their orbital position is still in the sunlight. Just before dawn one can also see the orbiting machines in the heavens above. Most satellites are registered and their orbits are published by government authorities. Some “secret” ones are not, but a small group of amateurs hunt them down in their free-time, calculating the orbits by collecting individual spottings from different times and points around the globe. Figuring out the orbital data makes prediction possible for future passes and subsequently adjustments to the orbit. The enthusiasts exchange their findings through the “See-Sat” e-mail list.

Satellite Zodiac is a taxonomy of satellite constellations to give satellites visibility and meaning. Satellites can either stand still relative to our position or move on asynchronous paths with different speeds depending on their orbital type. The constellations are therefore determined by time and location. They are ephemeral by nature, existing only for fractions of a second. A theory of satellite constellations must allow for those special circumstances of moving objects in different orbital planes.

Satellite Zodiac is an installation where motor controlled laser pointers display the current position of up to 12 moving satellites in our field of view in real time plus the belt of geosynchronous satellites – the satellite milky way. Just like in a planetarium where the star constellations can be displayed, illustrative interpretation of the emerging (satellite-) constellations explain their meaning and reflect our technological contemporary mythology. The C64, iPod, Gameboy, Polaroid and Walkman are among zodiac symbols of satellite constellations.

The Satellite Zodiac project was made possible with the support of the Thuringia Arts Council (Kulturstiftung des Freistaats Thüringen).


 Unsigned

Alejandro Duque (co)

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Luis Bustamante (co)

Artist/Interaction Designer

We are developing a new manifesto based on the Bogota Declaration of 1976 in which eight equatorial countries claimed sovereignty over the geostationary orbit. The declaration is a somewhat forgotten document about inequalities in technological power, the physics of orbit and its contested spaces. We will try to discover what the geostationary orbit can mean to us and define our own protests, rituals and love songs in relation to it.

We were struck by the way this United Nations document reads like a poem. It is full of fervour, challenging the great powers and at the same time describing the extraordinary architecture of this necklace-like ring of satellites encircling the Earth.

The geostationary orbit is where satellites orbit the Earth at 36 000 km above the equator, such that they appear to be stationary over the Earth below them. If it is thought of as an architecture, as a part of the human-made built environment, then it can be likened to the compelling circles of prehistory, such as Stonehenge in UK and those in Senegambia.

Described as a 'limited natural resource', the most coveted spots in the orbit were taken early on by the United States and the Soviet Union, leaving latecomers to bear the cost of less favourable positions. The signatory countries, Brazil, Colombia, Congo, Ecuador, Indonesia, Kenya, Uganda and Zaire were drawing attention to the inequality of bay allocations as well as the usefulness of this orbit to their own development needs. The issue has never been ratified, though it has been debated ever since within the United Nations Committee on the Peaceful Uses of Outer Space (COPOUS).

We are working to build up a common voice and stand that strives to raise awareness of this orbit, its political complexities and its poetics. The base and technology for the project is the Dorkbot subwiki of Medellín, Colombia. This lets us collaboratively rewrite and rework the document, in Spanish and English to start with, to allow the meanings to become more fluid and for us to shift perspectives through the language. We anticipate that further language translations will happen through collaborators and that this will

be part of opening up the emotions, metaphors and protest of the document, besides invigorating its distribution. The project is open to participation through the network of the wiki and the networks that emerge through the acts of making work.

Beginning with writing, the new manifesto will extend to song writing, drawing, experimental music and events, exchanged online, on the ground and through space. There is the possibility of transmitting results to the geostationary orbit and beyond via the Goonhilly Satellite Station in Cornwall, UK. Besides this, the geostationary orbit is itself made up mainly of communications satellites (INTELSAT, INMASAT and INTERSPUTNIK) taking internet, mobile phone and TV signals via networks that make the passage of information enigmatic, almost impossible to trace. Our work will unavoidably find ways to travel there.

Laura Plana (es)Department Image Science
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lauraplanagracia@hotmail.com**Database Visualizations,
Mapping and Cartography****Genealogy of Space. Visual
Representation for Knowledge in Art**

Art and technology awareness is used in new media as a strategy since 1989, the end of the Cold War. It symbolises the analogue to digital system conversion and the end of industrial mode of production. It also implies the dominion of public social space under surveillance and the impact on landscapes, among others. Cartography is a system of visual representation of knowledge to display in exhibitions of contemporary art solving problems to society under value of ethics. Also it belongs to Genealogy of Space, a categorization initiated by Foucault with panoptic and heterotopia, which continues with non-site, atopia, distopia, utopia, the permanent site of power, TAAZ (Temporal Autonomous Zone and Borders). All physical or non-physical spaces are conceptualized in an embodied/disembodied effect on the subject. Psycogeography is another system of representation giving solutions as heterocronos or real time, an approach to performance. The deconstruction in dada objecthood and the meaning of surrealist images make contemporary cinematic visual era understand what Tarkovsky in this film *Stalker* synthesizes under the meaning of the cave, a manner of production art in relation to society. Then, art turns into a visual representation of knowledge and its strategies of visualization, representation and displaying are affected by progress, history and evolution. This implies the displacement from the unique vision (the plane earth in modern age) to complex models of visualizing (affected by NASA and aerospace) producing systems as video.art to net.art, that are representing, communicating and informing. The more significant contribution in that field of research is Fredric Jameson dealing with the cognitive map and how about visualizing information under matters of subjectivity and translation of meaning and also the codification and hermetism of the point of view that Buckminster Fuller tries to solve in the Dymaxion map representation. Databases, mapping and cartographies encounter in conceptual art an immediate precedent. Using documents and

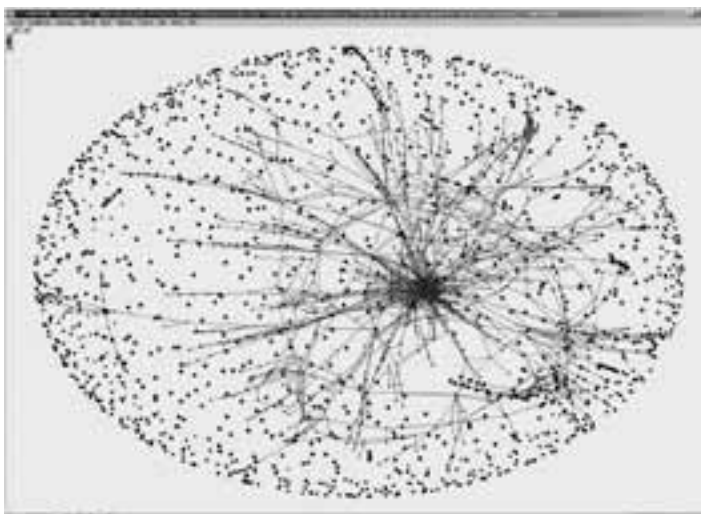


Fig. 1: Database Visualization Photo: Gerhard Dirsomer Ars Electronica Database

art & language aesthetic based in lists, alphabetical order or archives, the 70s conceptual art is based in the relations of art and memory. Nowadays database visualizations are the site of documentation and materialisation of knowledge, based in software and interfaces. In that sense, maps and diagrams are the resulting site depicting data but recognising the incomplete representation on computational machines. As Ascott appoints, in future the connectivity of computers will set up the total intelligence of humanity. On the contrary, media art databases are considered by Alan Turing an impossible ideal representation because of random access to information and the searching determinism in browsers. Webstalker by I/O/D is one of the art alternatives to Google. From Nam June Paik's *Random Access* (1960) to Josh's *On They Rule* (2005) databases, nomadic politics and decentralised poetics encounter in post-capitalism a deterritorialized space surviving from system hazard, building the common global village of Lev Manovich. In that database visualization displaying of data, information and knowledge, are more than 600 existing models of database visualizations of information, basically diagrams based in softwares like thesaurus or processing. Gerhard Dirmoser and Ben Fry are working on them. Many types of software (basically based in artistic opensource tools) are being used as a mapping strategy to display an interactive visualization of the cyberspace flows. Based in cybergeography, they are trying to depict the density flux of communication networks, databases and many other networks. Also named and recognized under categorization of mapping the net, they are using clusters, processing and pure data. Some common examples are Antidatamining, Antoni Muntadas, Ethan Miller or Warren Sacks. Mapping the city is based on the counter-map ideology of Fredric Jameson. One of the main points how to act is the surveillance displaying. Many actions using locative media are

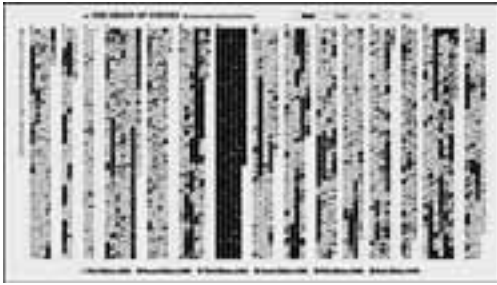

Fig. 2: Database Visualization

Photo: Ben Fry On the Origin of Species: The Preservation of Favoured Traces


Fig. 3: Mapping the net

Photo: Antoni Muntadas On Translation Social Network

recognised as well as tactical media, although there are some differences between them. Soundscapes are included in that field of research trying to deconstruct the relation within space, time and sound. Artists as Jodi, Stanza, Manu Luksch and medialabs around the world display and research with opensource, mainly, to improve data conditions in public space. These co-existing different strategies to map the city are working with surveillance, traffic, weather and pollution, security and health, among others more abstract as feelings, identity or memory. Also, data displayed in streams is dealing and confronting publicity vs information. From situationism to psychogeography, the contemporary art devices display into the city strategies not to perceive the city as a decorative stage for massive corporation, but such a place of memory, refusing the commodification of non-place and the unifying landscape. Since surveillance has turned into merchandise, other tools to socialise public space (implies strategies in communication, location, weather or transport) are being used for artist to build so called DataCities. The George Orwell Big Brother control and securitizing system is now reality. Landscape implies an understanding of melancholic aesthetics where the ethos of subject turns into a participatory agent in history who reading the memory of landscape turns it into the poetics of the space, field of artists.

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ITCH

Individual Technology/
Community Hacking

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ITCH is

“an unpleasant sensation that causes the desire or reflex to scratch”

This project is a broad artistic exploration of new phenomena originated by mobile communication/computing technologies. It consists of a series of experimental works, research activities, and workshops to investigate the media devices most closely connected to human bodies and its surroundings, and ultimately find new forms of individual expression with them. In contemporary urban life, people continue to grow increasingly consumer-oriented, forcing our bodies to deal with media screens that provide commer-



Fig. 1: Smartphones have the potential to create new instances for social interaction, but also for deeper isolation. Photo: Andres Colubri

cially and politically stimulated contents while individual subjects disappear along with personal style. Individuality is critical in recreating everyday life within the otherwise closed world of continuously recycled and redundant mass-media imagery. Smartphones, for instance, took the already omnipresent TV/computer screens [Bourriaud, Nicolas, 1998] into the individual place.

From Virilio's pessimistic takes on the effects of technology in our society [Virilio, Paul, 2006] to the utopian techno-fascination [Maes, Pattie and Mis-

try, Pranav, 2009], passing through humorous and/or scientific observations about the “social sacrifices and opportunities to interact with one another lost due to our own self-involvements” with always-available media/communication, we must find the spaces for transgressive uses of these technologies. It is within technology’s greater risks for control and isolation where the greater potential for transgression and liberation exists [Galloway, Alexander, 2004].

The goal of ITCH is to provide users (individuals) of mobile devices with tools that would allow them to by-pass the commercially-approved functions of their phones in order to manifest and perform their subjectivity in everyday life. The desire in ITCH is to turn (hack) the mobile screen from a surface for passive consumption of media into an interface for new social interactions.

The following three questions are the guidelines in ITCH.

- 1) What novel usage paradigms would be possible by taking into account the unique properties of mobile computing devices?
- 2) Can these new paradigms lead to transgressive uses of mobile devices that expand personal expressive potentials of individuals?
- 3) Given a community of users who are engaged in such personal appropriations of mobile technologies, can these personal expressions and uses lead to the manifestation of unseen public desires?

Within the framework of these questions, ITCH carries out different projects and some of which are briefly described below.



Fig. 2: Examples of smartphones used/hacked for unintended purposes.

Photo: Left: Hacking iphone's accelerometer (<http://www.engadget.com/2007/08/28/iphones-tilt-sensor-hacked/>). Right: “A-Life” cell phone performance (<http://www.textually.org/textually/archives/2006/12/014390.htm>).

Project 1: Visualizing hidden desires

Social researchers are starting to use cellphones and smartphones to study human behavior [Raento, Mika et. al., 2009]. Numerous tools are being created for mobile data acquisition, geo-annotation and sensing, and knowledge mapping [Urban tapestries, <http://urbantapestries.net/>]. Mobile devices have become an indispensable medium for interpersonal communication. Most people generate an immense amount of data with the daily use of mobile phones, and this data can be processed and visualized in various ways to visualize social patterns of interaction. Can we reveal usually unseen behavioral structures that reflect how deeply mobile technologies are ingrained in our personal lives?



Fig. 3: First prototype of Android-based live drawing performance piece, being developed by the authors as part of the ITCH project. Photo: Andres Colubri

Within this specific context, we are working in the acquisition of mobile phone usage data to visualize unseen public desires of interpersonal interactions, contextualized by time and location. The following themes are of particular interest to us: personal closeness (or lack thereof) as mediated by mobile devices, alienation (from our physical surroundings) by virtue of constant communication, and the interactions that occur at unusual moments or locations (since mobile phones are with us at all times and places). Three different data visualizations are being investigated in order to provide a multidimensional exploration of the social effects of mobile technologies.

Project 2: Hacking smartphones into performance devices

We are currently developing a live drawing performance project that uses touchscreen-based Android smartphones as distributed input devices to generate a drawing collage in real-time. It aims to convert an individual technology into a platform for communal hacking and participative experience in public spaces. The participants will use the touchscreen of their phones to input hand-drawn gestures. The phones will run a client application to communicate with a central server software which will combine in real-time the gestures drawn by each participant into a large scale canvas. The resulting live collage will be projected onto a suitable surface in the space where the performance takes place. Although there are numerous applications on both the iTunes store and the Android market that implement touch-based sketching, there is none yet that turns drawing on a mobile device into a participatory live experience.

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Keynote

**MIND-LAUNCH:
Reflections/Projections
on Education as Art****Roy Ascott** (gb)Planetary Collegium
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Founding President

This paper looks primarily at the development, and the possible present and future relevance, of two specific projects, the Groundcourse of the early 1960s and the Planetary Collegium of the new millennium. There is a third project of the early 1970s, lurking in the wings, which, although more radical, and potentially efficacious than the first, lasted a mere 12 months, and so has been consigned by some to the dustbin of history. The link between all three initiatives has been the search for structures that elicit and support creativity, enable research, and develop innovation – of systems, cyberception, identity, language, and behaviour. The field is art, technology and consciousness (technoetics). The thread that links these initiatives is what I call ‘cybernetics of the third kind’, the art of connective, interdependent, associative, transformative syncretic systems. Education as art resists orthodoxy, denies academic predictability, opens up the territory of the unknown in all its fields of inquiry and practice.

The Groundcourse began in 1961 at Ealing, London and ended in 1967 at Ipswich, an education based on process and system, concerning behaviour, identity and change (eventually closed down by educational experts). It was the first of a number of ideological interventions, the most spectacular perhaps, being at the Ontario College of Art and Design in Toronto, where I was the president for just one academic year. My sin was to have totally restructured the curriculum, establishing primary zones of Information, Concept and Structure, articulated from the point of view of theory, analysis, speculation and social application, thereby desacralising the century-old divisions

of fine art, weaving, potting, graphic design, fashion, product and industrial styling, and removing the petty privileges of old territorial serfdoms. The architecture of this initiative, the work of a small team working closely with me over an intensive summer, was made totally transparent, and available to students as a tool to build the curriculum of their dreams. But the pioneering spirit of Upper Canada faltered here. I was duly beheaded! [1]

It was at ISEA 1994 in Helsinki, that I first presented proposals for the Planetary Collegium [2], defining a worldwide organism of advanced research in art. 30 years earlier, *The Construction of Change* [3] described the Ealing Groundcourse (later developed as a *Cybernetic Art Matrix* [4]). The years between these events, took me on a tortuous but enriching journey across several continents, involving many remarkable people, the publication of hundreds of papers, manifestos, conference presentations, seminars, and some quite radical institutional restructuring. In 1994 I launched CAiiA, The Centre for Advanced Inquiry in the Interactive Arts, and the first Ph.D. programme in the practice and theory of interactive art. In 2003, *the Planetary Collegium* was finally established with its Hub at the University of Plymouth, and Nodes in Zurich and Milan. Around this time also, I was installed in a new chair for Communications Theory at the University of Applied Arts in Vienna where for the next seven years the opportunity was provided to develop processes for education as art in the telematic context.

If the seeding and growth of meaningful educational innovation under the various political and educational regimes have been fraught with resistance in the past, the future is no less problematic. There is for example considerable confusion between inter-disciplinary and trans-disciplinary methodology; the one synthetic, the other syncretic. Synthesis is often only skin deep; a cautious accommodation of disciplinary interpenetration, preserving old words in new contexts, and generally more ideological than creative. Syncretism, on the other hand, calls for new language, new structures, and new behaviours. The future I see is of a wholly syncretic, planetary art.

Back of the earlier projects I have cited, and at the root of all my education as art initiatives since then, is an understanding of the central role of cybernetics, the science of dynamic, interrelated systems and processes of communication and control in living and artificial organisms. It has served to inform my practice as an artist, in perfect sync with my work as a teacher and administrator. It was as true for me in the 1960s, as it is for me now. as I continue to develop the Planetary Collegium. While many issues for education remain the same, and von Foerster's second-order 'cybernetics of cybernetics' remains the foundation stone of progressive thought about emergent networks, newer, and in a sense, more pressing issues are upon us: the necessity of a syncretic resolution of cultural and political differences, the emergence of the multiple self both in cyberspace and in the material world, our experience of the variable reality of worlds currently discovered and constructed, the navigation of consciousness, the utility of field theory, the prevalence of process over product, the social value of social networks, the spiritual significance of the nanofield.

The old cognitive fix of digital systems will increasingly give way to new approaches to the chemistry of mind. Media has not just become *moistmedia* but is beginning to embrace the notion of bio/neuro/geo/chemico/cogno/nano/astro/pharmo/psycho media. Media, in other words, that transits the spectrum of wet and dry, natural and artificial, embodied and distributed, tangible and ephemeral, visible and occult.

Equally longstanding in the practice of education as art is the question of evaluation, which has grown progressively problematic and destructively bureaucratic. Quality, ownership, authorship, intentionality, meaning, skill, purpose, responsibility, as traditionally defined in art discourse, are all up for re-evaluation and interpretation. Students increasingly challenge the canon of values that try to assign them a place in the firmament of art. Their rejection and refusal of old codes of assessment and aesthetic differentiation come from the recognition of the quicksand of taste on which they are so often based.

Given all these changes and challenges, a crucial contemporary question is, where are to be found the guides to new possibilities and necessities of an education as art? By what experience and skills will these guides supervise unforeseeable behaviours, and fluctuating aesthetic decisions? Who will guide the guides when the event horizon is always receding? Who guides the guides, when they are themselves exploring the unknown and challenging the unknowable? It is in these unknown territories of pixels and particles, mind-to-mind communication, and out of body telepresence that research in media arts practice is located, where no meta-language presides, and where new forms of description, navigation and mapping must be invented. In the new educational territory, who will extricate travellers from the quicksand of relativism, and support radical methodology? Education as art becomes the collective responsibility of groups of explorers, collaborating across networks to climb the summit of new knowledge, sharing insights and websites along the way.

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P 28

Digital Art | Digital User

Hosted by Universität Siegen



- Dominika Szope (de):
The Impact of Active Viewing, and Visual Literacy in Art Exhibitions
- Anett Holzheid (de):
Words and Characters in the Age of Electronic Performativity
- Julius Popp (de):
The Artistic Approach and Conceptual Framework
- Katja Kwastek (de):
The Aesthetic Experience of Interactive Art. A Challenge for the Humanities

Since the beginning of digital culture, new technologies have exerted a deep influence on the arts – in their mode of production as well as interpretation. This panel aims at new concepts of today's audiences, who emerge from a vanishing divide between media artists and media skilled users. The phenomenon of a new type of viewer/user of electronic art and its challenging consequences will be unfurled in lectures, a presentation by media artist Julius Popp, and a final discussion round.

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The Impact of Active Viewing, and Visual Literacy in Art Exhibitions

Active participation of the recipient is one of the basic themes in 20th-century artistic production. In the 1950s and 60s, op art and kinetic art, on the basis of analogue media, already revealed the artists' intention to involve the audience in the completion of the artwork. Interactive pieces of the 1990s bring new media to the fore and pose new challenges to the viewer. The dwindling distance between artist and viewer, adumbrated, for example, by the work of Sommerer and Mignonneau, "The Interactive Plants Growing" from 1992, can be observed today in numerous works that demand a high degree of engagement on the side of the viewer, e.g. "Messa di Voce" (Levin/Lieberman, 2003) or "Flick_KA" (Weibel/ Gommel, 2007). Viewers increasingly take charge of the visual part in the work's genesis, based on the implemented concept provided by the artist. This observation leads to the question of the viewers' constitution. It is less about their sensory perception of the work than their capabilities. With which aesthetic awareness do exhibition visitors act, and what degree of creativity do they bring along? Is it legitimate to attribute to viewers a certain amount of creativity in their dealing with interactive works, thus lifting them above the role of "mere" spectators?

Media culture, consisting of interactive media artworks per se, implies competence on the side of the recipient, something, which can be roughly described using the concept of visual literacy. Visual literacy is an essential component of communicative competence (Baacke, 1996) and can be defined as the ability "to recognize, analyse, evaluate, and produce visual messages" (Lacy, 1987). In regard to the question of creativity, visual literacy appears fundamental, for without being connected to the knowledge of present-day gaze culture, the production of mental results would be impossible, or at least extremely difficult. A first suspicion of creativity on the part of the exhibition visitor arises when encountering the interactive artwork. The approach to an interactive work and the willingness to get involved with

instructions given by the artist demand openness toward a course of action that cannot be fully gauged at the beginning. The subsequent pause, considering things, and the following “aha-experience” or a “sudden insight” refer to how creative processes are structured. The ensuing repetition, or trying things out again, can then indeed be identified with the phase of “verification” – “making sure that the solution works.” Although it hasn’t been empirically proven, this model may offer initial orientation. Creativity opens up potential situations and is generally described as the ability to create something new (Barron, 1965). Its criteria lie in the originality and novelty of solving problems and in a certain usefulness to society (Dorsch, 1994).

The lecture examines the situation of present-day viewers of interactive media artworks and investigates the possibilities of newly describing their role, now brought about by the decreasing distance between producer and recipient. The productive achievements of viewers, as well as the current reintroduction of dated concepts such as amateur or dilettante, especially in the field of Web 2.0, give rise to the question of whether the designation of an “active viewer” is still sufficient today. The focus is on contemporary gaze culture and the viewers’ visual literacy, which makes a certain degree of creativity possible in the first place. The aim is to elicit the potential of creativity and thus the role of the viewer – which may have to be newly defined.

Words and Characters in the Age of Electronic Performativity

Anett Holzheid (de)

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What are the influences digital technologies are about to exert on our concepts of written language? For some time now animated design has become state of the art in new media typography. Abundantly, language in TV news formats, advertisements, and video clips is being set footloose. Thereby it seems that the playful novelty of the choreographed formation wears off rather quickly. However, they are not symptoms of pure entertainment tendencies of commercial culture either. Used in a skillful way animated letters enact a new stylistics based on typographic rhetoric. They are beneficial as part of a rich multimodal texture together with sounds and images to generate information that appears semiotically and sensually gripping. All in all the various kinds of animated markup (dynamic changing of letters in size, color, position, or speed and direction of flow) serve traditional functions of communication (getting and keeping attention, highlighting hierarchies or relations within the information given, enhancing visual pleasure and affirming the memory effect).

The contemporary hype of moving letters within digital communication culture seems to find little response in the digital arts. First of all written language seems to be a prudish material for the fine arts. Nevertheless, there are renowned artists who care about visual language as part of their works albeit the linguistic turn has been superseded by the iconic and spatial turn. Despite formal similarities it is to be shown that language as artistic material differs profoundly from communication design. Scholarly expertise is required to analyze the aesthetic and conceptual characteristics of language art and its function within communicative culture.

A letter as part of the alphabet from a linguistic viewpoint does not carry any meaning. It is a distinct unit as part of a phonographic system that

evolved from a process of defiguralizing of former iconic symbols. Especially within the Gutenberg galaxy the letter got tied to the horizontal and vertical grid of linearization. This affirmed an aesthetic that was accurate to the scheme – sort of stripped bear of its aura of the unique calligraphic initial, and a flawless allographic reproduction solidly placed without tilting or bending off the reading line. Consequently the perceptible impact of letters was reduced to the abstract and cognitive features of written language as a carrier of meaning. This also consolidated the divide within the arts between literature and the fine arts.

Against this background the close analysis of a few examples of word art shall be discussed from a historic perspective as part of analog and digital moving images. It will be shown that contemporary word art can be traced back to art movements like DADA or Fluxus but still makes a paramount contribution to modern communication issues. While using new technology in their installations or video performances the word artists at the same time hold an eccentric position which allows them to comment critically on language, new media, and communication. In allusion to Julia Kristeva one can speak of a second revolution of poetic language to describe works by Paul Sharits, Jenny Holzer, Tony Oursler, Jeffrey Shaw, Julius Popp, or Camille Utterback. With this perspective critical concepts are translated into various aesthetics of language. Within these aesthetics a number of key terms come into play to describe on the one hand the break with traditional concepts of language: poeticization, pathologization, pictorialization, spatialization, corporality. On the other hand these terms open up the problem of interpretability. Assuming that the works of word artists do not end up in a gesture of pure negativity, the question has to be raised what kind of semiotic as well conceptual strategies are employed to create meaningful works of art. At first glance artists seem to deconstruct a number of certainties from the realm of communication: for example advertising and political phraseology (Holzer), digital flow of information (Popp), trivial mythology (Oursler), perception and neurology (Sharits), or meaning as pure intellectuality (Utterback). This approach implies that the academic interpreter as much as the experiencing visitor of the artwork is confronted with a true challenge, namely to decide whether a certain artistic expression goes beyond an identifiable critical stance and alludes to some kind of alterity.

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The Artistic Approach and Conceptual Framework

Julius Popp's intricate multimedia installations are manifestations of an artist's view on digital culture. To grasp formation processes of human consciousness and knowledge within an electronic environment, the artist develops interdisciplinary works in which art and science converge. They explore the digital paradigms of signification and systems of distribution. At the intersection between art and science the works of J. Popp redefine the notion of interactivity. In his Micro-series human cognitive adaptation processes are investigated whereas the Bit-series create metaphors for these same processes.

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The Aesthetic Experience of Interactive Art: A Challenge for the Humanities – and for the Audience

Due to its processuality and multi-modality, interactive new media art presents a challenge for the humanities. Not only is it a hybrid of visual and performative arts, it even exceeds both fields of research through its foundation of aesthetic experience on action as opposed to contemplation.

Interactive art is, on the one hand, a technical system designed by an artist (or any entity that can be considered author of the system). This system has a (more or less) permanent existence as material or coded interaction offer, independent from its actual realization by the visitor. This characteristic determines two basic parameters of interactive art: It is usually presented in the context of an exhibition (not as a scheduled performance), and it can age, i. e. become a historic "work of art".

The asynchronicity of the interaction design and its realization thus suggests its analysis in the context of the visual arts.

On the other hand, interactive art manifests itself in its full complexity only through the ever new realization and actualization by the visitor – the active experience of the work is considered the basic source of aesthetic experience. The visitor is thus turned from audience into actor, although they retain the role of observer, expected to perform and contemplate at the same time. A thorough analysis of interactive art therefore has to do justice to their status as referable 'works of art' as well as their multiple possible manifestations and their potential for manifold experiences.

Art history's competence lies in the analysis of relations between formal design and emergence of meaning, but they usually deal with static entities. The processual nature of interactive art demands its interpretation within the context of time based arts: Due to its potential use or production of moving images, parallels to film and video can be observed, though the process of interaction itself shows closer similarities to the performative arts. Like them, interactive art is based on staging and performance. But, as opposed

to other performative arts, the active participation of the visitor is indispensable and there is usually no co-presence of artist and visitor during the realization of the work. Instead, roles are reversed: the beholder becomes performer himself. To do justice to the foundation of aesthetic experience on action instead of contemplation, interactive art research eventually has to look for models outside of the humanities: As will be argued within this paper, the analysis of the aesthetic experience of interactive art can gain from the consideration of theories of game and play, also focusing on action that is distanced from the everyday.

An aesthetic analysis of interactive art therefore has to take into account research in the areas of art history, theatre and performance studies, and multidisciplinary game studies – and of course also further disciplines, such as informatics and interface design, can offer pertinent insights into interactive art. But the challenges presented by interactive art are not limited to its need for transdisciplinary contextualization. If we agree that the aesthetics of interactive art reside within the aesthetic experience of its realization, we have to find ways to actually study this process.

Art history, but also performance and literature studies, are generally based on individual observation and analysis (even if accompanied by the study of documents or prior research), thereby accepting the subjectivity of perception and interpretation of the research object. This approach can also be considered the main approach of interactive art history, it even lead to an imperative that has become a 'code of conduct' of interactive art research: "Never write about an interactive work that you did not experience yourself!"

But if, as is usually argued, interactive art is not only characterized by the need for active realization per se, but is based especially on the potential of manifold and ever new realizations by different visitors, shouldn't the imperative be: "Never write about a work of interactive art only from your own experience!"? Can the analysis of interactive art gain from sociological and anthropological methods of reception research, based on observations and interviews? Or does the verbalization of aesthetic experience demand skills of language, knowledge of art and readiness for reflection that remain, in the end, the domain of experts?

This leads to a final but all the more pertinent topic, already suggested in the headline: The challenge interactive art presents for the researcher is deeply related to what it demands from the audience. If the goal of each realization of a work is aesthetic experience, each visitor has to accomplish the balancing act between active control or exploration of a system which is completely unfamiliar to him, its contemplation (pleasurable, discomforting, alarming, or nerve-racking), and its reflective contextualization. Interactive art that does not content itself with presenting technical skills or entertaining its audience has to find ways to support aesthetic experiences that actually enable a heightened awareness and/or reflective examination of the processes presented. Audiences expecting this kind of insights have to develop a readiness – and maybe even skills – to accommodate contemplation and reflection within the active realization of the works.

P 29

Latin American Forum I: Variantologia Latina

■ Siegfried Zielinski (de):
Variantologia Latina

■ Domingo Ledezma (ve/us):
Interpreting New World Nature: Niermberg's Historia Naturæ
as a Palimpsest of Fantastic Literature

■ Karla Jasso (mx):
Novohispanic Imaginary, Light, Shadow and Diagrams

The “Variantologia Latina” panel explores the deep roots of media history in Latin America, inquiring into phenomena which anticipate the concepts of network, photography and scientific tools before the 20th century.

Variantologia Latina

Siegfried Zielinski (de)

University of the Arts (UdK), Berlin
Professor for Media Theory

The southern part of the two Americas was baptised Latin America in early modern times. By importing academic Europe's Esperanto, Latin thus became the label to characterise South American culture. This culture was defined from the perspective of the Latin-Christian civilisation. Active in the centre of this intellectual colonising process were the elite troupes of the Vatican, i.e. the congregation of the Jesuits. They were sent away from Rome by the pope in order to universalise the world in a single faith. Even the great GWF Hegel still understood South America's identity solely in relation to Christian Europe. "Variantologia Latina" as an experiment is working in an opposite direction. It proceeds from the assumption, that the different countries and regions of South America have developed their own knowledge and technology cultures as well as their own forms of linguistic expressions, their own music, machines and technical images long before and parallel to colonisation. The archaeology of South American media could carve out these developments from the deep-time developments of history and have them unfold within a new context. ISEA2010 RUHR is set to be the place for breaking the first ground.

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**Interpreting New World
Nature: Nieremberg's *Historia
Naturæ* as a Palimpsest of
Fantastic Literature**

Revisions to our understanding of the Scientific Revolution in the history of science over the last several years, have prompted greater interest in subjects related to transcendental philosophy, colonial spaces, teratology and religious corporations such as the Jesuits. The Society of Jesus, since the time of its inception, exhibited a strong vocation for the accumulation of knowledge. A vast corpus of works written by Jesuits suggests their curricular diversity: theology, historiography, natural philosophy, mathematics, and astronomy. In their schools, intellectual activity was heightened by newfound knowledge of cosmography and nature coming from the overseas missions. This information on remote regions and their inhabitants prompted the creation of a vast number of books on natural history.

The figure and work of the Spanish Jesuit Juan Eusebio Nieremberg, professor of Holy Scripture and of natural history at the Imperial Jesuit College of Madrid, takes on an important role within the process of reevaluating Early Modern science. His more important scientific work *Historia Naturæ, Maxime Peregrinæ* (1635), compiles in encyclopedic form all knowledge about nature in New World regions that had remained dispersed in various manuscripts and printed works. [Fig. 1] Nieremberg's sources were in part derived from reports sent by Jesuits missionaries, as well as Spanish chronicles of the 16th century. He compiles this vast encyclopedia combining sources as the work of Francisco Hernández, Nicolás Monardes, Jean de Lery, Pierre larric, Giovanni Maffei, José de Acosta, Fernandez de Oviedo, André Thevet, etc. A piece of literature difficult to categorize, *Historia Naturæ* is a hybrid encompassing novelties, rarities and shocking natural occurrence, and it can be situated half way between the symbolic and allegoric natural history of Renaissance humanism and the morphological and taxonomical discipline



Fig. 1: Title page of *Historia Naturæ, Maxime Peregrinæ*. Antwerp: ex officina Plantiniana Balthasaris Moreti, 1635. Photo: Courtesy of the John Carter Brown Library at Brown University

that will impose itself during the Enlightenment. *Historia Naturæ* follows the model of Pliny's *Naturalis Historia* in its division of plant and animal kingdoms, and in the inclusion of legends and stories to illustrate the peculiarities and rarities of nature. From this point of view we also find ourselves with what seems like a palimpsest or anthology of fantastic literature.

Nieremberg's book describes and classifies the flora and fauna of the New World, especially that of the Mexican region and the Andes of Peru, and includes information regarding the customs and rituals of the Aztecs and the Incas. Importantly, within his meticulous descriptions of nature Nieremberg preserves the indigenous names of plants and animals, in Nahuatl and Quechua and other indigenous languages. *Historia Naturæ* discusses a wide variety of phenomena and curiosities, particularly those of the New World. The accounts, chronicles, and reports of nature that were his authoritative sources, offered him a catalog of curiosities to sustain the most fantastic theories. Though operating at the center of the Jesuit world, Nieremberg manifests a tradition that is in great measure neoplatonic and inclined to the rationalization of fantastic events. Nieremberg forms what could be termed an aesthetic-theological theory of nature. He studies it as a harmonious entity of strange beauty, full of symbols through which one can understand or intuit the unseen work of the Creator. By explaining and justifying the existence of natural phenomena and curiosities, Nieremberg postulates an interpretation of nature in which even the existence of monsters and

miracles springs from a divine order and harmony. Nature is a sacred book where God has encoded his mysteries and wisdom. Nieremberg's task then is to interpret God's enigmas and derive from them a lesson consistent with Christian dogma.

In his dedication to the Archduke of Olivares, Nieremberg indicates the key to comprehending and reading his work: "I will make an interpretation of nature," an affirmation that defines the intellectual and cultural criteria of his natural history. Along with the systematic description of the natural world, he's interested in finding a hidden meaning to the flora and fauna he describes. The order of nature pertains to a sphere of knowledge that is inaccessible to him. But, his particular expertise as a scholar gives him the tools to literally read, interpret, and comment on the curiosities of nature.

Scarcely studied, *Historia Naturæ* has been labeled fantastic and unscientific, criticisms that miss the purpose and meaning of the book. It is above all else an exegesis of nature within the traditions of biblical commentaries and emblematic interpretation, similar in purpose to Nieremberg's works on biblical exegesis. Considering this fact helps to understand the work without the scientific prejudice of our times, and opens up the possibility of reading it for its imaginative and symbolic aspects.

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Karla Jasso (mx)Laboratorio Arte Alameda
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This text is set forth in consideration with a task we have already begun to engage in Mexico, whereby some of us researchers deem necessary to engage a genealogy of the relations between (relatively) contemporary art and media, alongside a reading through the prism of media theory that articulates an archeological notion of these elements. It appears increasingly necessary to bring about a first action of inscription for this mode of thought, structuring a program that covers not only the 20th century or current times, but one that reaches back in time to substantially inquire the formation of art-technique-science relations in the Novohispanic imaginary and as concerns the birth of a “criollo” historic consciousness.

Taking entanglement as a starting point, there are two texts crucial to the development of this proposal: *Deep Time of the Media, Towards an Archeology of Seeing and Hearing by Technical Means* (Siegfried Zielinski), and *La luz imaginaria, Epistolario de Athanasius Kircher con los novohispanos* (Ignacio Osorio Romero) [*The Imaginary Light, Correspondence between Athanasius Kircher and the Novohispanics*]. As the result of a parallel reading, we were struck by a link that goes beyond a “confrontation of historical times” or what could be considered the influence of one line of thought on a diverse context.

Studies in cybernetics, nanotechnology and robotics became entangled with arduous (and dry, at first) readings regarding the astronomical science, that radical visionary proposal of the first studies in modern science of the Mexican baroque period, as put forth in the work of Carlos Sigüenza y Góngora (17th century). Another such entanglement occurred in relation to the notion of light and shadow as is manifest in the poetry of Sor Juana Inés de la Cruz; mainly in her classic “*Primer Sueño*” [*First Dream*], where all the attention seems to reside in the explicit associations and connections rooted in the neologism “*to kircherize*”. In attempting to contextualize this type of interpretation, we found these texts to be woven out of the tense postcolonial

gaze and its stance towards science, politics and Novohispanic religion, as well as from a line of the history of mentalities, where this type of recurrence tends to present a much more ideological tenor.

Except for a few elaborations from History of Science (the work of Elias Trabulse is of utter importance for this research), an approach that questions the notions of apparatus, machine, innovation and communication is practically inexistent within said context. Despite the importance placed during the 17th century (by Sigüenza y Góngora) and later, during the 18th century on the *time calculating machines* of "Ancient Mexico," most of the remaining texts centralize on "mentioning" the influence the ideas of Athanasius Kircher had on Novohispanics; or well, in developing absolutely instrumental genealogies of the "reproduction" of magic lanterns and other precinematic spectacles. Yet the repercussion is rather more complex than the reaches of said expositions. One clear example of this could be inquired as follows: Why do these studies center on the struggle for ideological emancipation, leaving aside the dynamic element, the "mechanic" potentiality, of the calendar wheels perceived as *diagrams*?

The critical vision that an interest in media theory generates does not abide in the instruments as such, but in the parallelisms. It is to be found in the trace of constellations based on the points of inflection that opened a phenomenon of visibility (or exposed its opposites: forget and obscuration) in a "Criollo" production centered on questioning the concept of invention. These points of inflection emanate from the relationship between art and science, specifically from the transformation of world-visions that emerged mainly through astronomy, the study of comets and eclipses, and the (military-commercial) obsession with the specific localization of the "Valley of Mexico." Analyzing certain key characters and their production of knowledge as signs of diversification, questions the discourse of the "distance between the centers of modernist effervescence." This route of inquiry will surely take us to another locus of production of meaning; one which is, alas, not that of *appropriationism*.

P 30

History of Computer Art

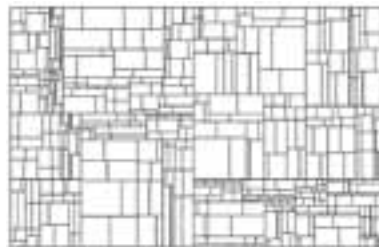
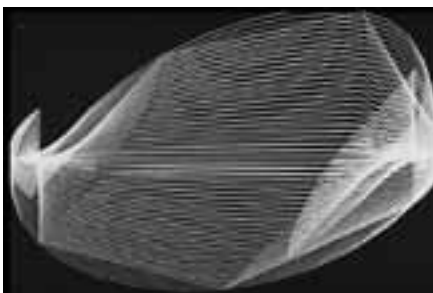
- **Wolfgang Schneider (de):**
In Favour of Computer Art
- **James Faure Walker (gb):**
Twenty Years of ISEA. A Painter's Response
- **Jürgen Claus (de):**
Footnotes to the Electronic Bauhaus 2010

**Wolfgang
Schneider** (de)

Museum of the City Gladbeck
Director

In Favour of Computer Art

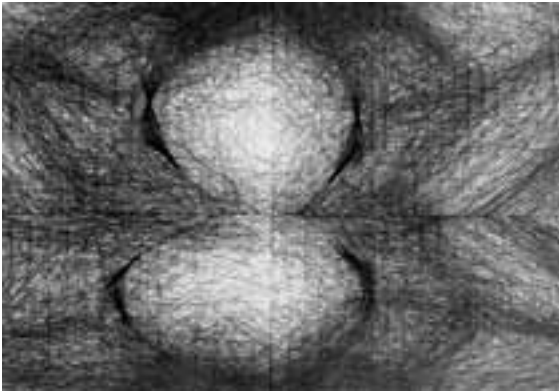
On the occasion of this year's ISEA Symposium in Germany the Gesellschaft für Elektronische Kunst Gladbeck/Cologne (Electronic Art Society) took the opportunity to set a time mark. It means a kind of halt and reflection on the passed developments of activities around electronic art, especially computer graphic art.



Why now? And how did it happen?

A quarter of a century ago we could intensify the exhibition programme in Gladbeck by starting a separate art gallery beside the existing town museum. Facing a broad cultural and artistic background in the Ruhr and Rhine region with institutions focusing on their mutual specific topics in exhibition and collecting policies in the arts Gladbeck's challenge was to find its special niche in surroundings like these. By chance a contact to an additional exhibit of works in computer graphics along with the C 84 Cologne Fair initiated the idea of transferring the activity to the Gladbeck Gallery and developing it to an open competition worldwide.

Emphasis was laid on the early medial possibilities of creating art by means of a computer. And this caused the start of awarding the best entries



in the competition and exhibition of “Computerkunst/Computer Art” with the “Gladbeck Golden Plotter” – a reminder of the first peripheral output gear of the computer for artistic purposes (historical background given in catalogue “Computerkunst/Computer Art” 2006, Gladbeck, 2006, p. 98 -101).

So in the long row of the awardees we consequently find many artists who created graphic art works which were plotted on paper. I mention Mark Wilson from the United States (1987), Quido Sen from Switzerland (1986), Hans Dehlinger from Germany (1999) and the algorist Roman Verostko from the United States (1996).

As James F. Walker states in his book (“Painting the digital river”, Prentice Hall, 2006, p. 250) we “kept loyal to the concept of the computer generated image” to a certain degree. But we had “to move with time” and only a small proportion of the exhibition is “plotted”.

So it included works of art and prize winners of very different branches of electronic art expressions like sound machines (Christof Schläger, 1996), visualized literature (Group Art et Ordinateur, 1992), animation (Shahin Charmi, 1990) and video installation (Mioon, 2006).

Looking back upon this lasting period of care and support in computer art I invited some of the pioneers of artistic computer graphics and remarkable tributers to our series of exhibitions (Catalogues of Computerkunst/ComputerArt-Exhibitions 1986 -2008) to produce the portfolio we are able to present for Computerkunst/Computer Art 2.010 and the ISEA2010 RUHR event to the public. We are happy and obliged to the artists to bring together works of Yoshiyuki Abe, Jürgen Claus, Hans Dehlinger, Herbert W. Franke, Georg Mühleck, Frieder Nake, Georg Nees, Quido Sen, James F. Walker, Mark Wilson. All of them having been in close connection to our activities in electronic arts in one way or the other – and being a part of the history of computer art here and on a large scale worldwide and worthwhile.

Twenty Years of ISEA: a Painter's Response

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In the earlier days of ISEA there were those who looked ahead and saw an epoch where art goes 'digital' wholesale; it would become disembodied from its physical shell, like the medieval soul breaking free from the corrupted flesh. 'Traditional' art forms were scheduled to mutate at the millennium. Exhibitions were announced as 'the art of the future'. Images and installations were unashamedly sci-fi-erie robotics staged in dark rooms.



Fig. 1: James Faure Walker 'Dark Filament' 108.5 x 124.6 archival Epson print African World Cup

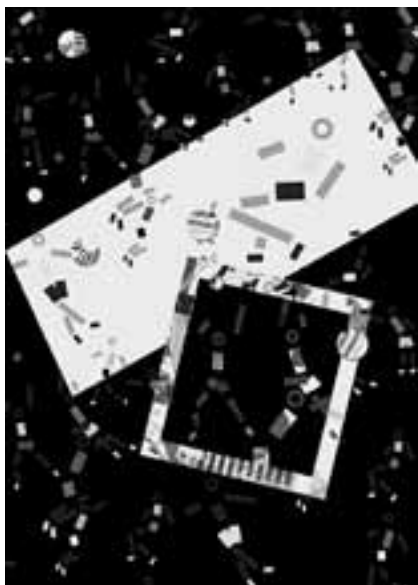


Fig. 2: James Faure Walker 'Up' 2009 84 x 60 cms archival inkjet print Photo: 2010 FineArt – International Fine Art commission for South African World Cup

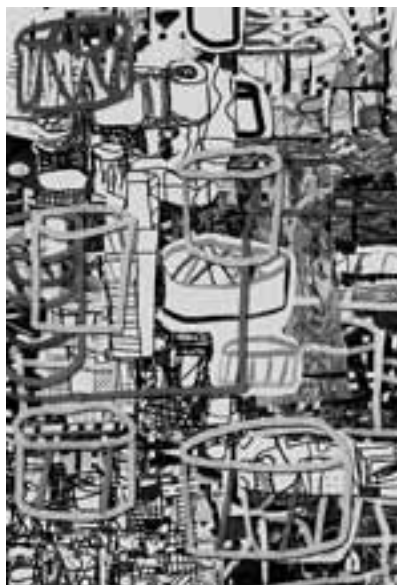


Fig. 3: James Faure Walker 'Colour and Drawing: Garden Table' 1998 81 x 56 cms giclee iris print

Twenty years later, ten years after that millennium that now seems insignificant in comparison with 9/11, we look back on those predictions as symptoms of the time, when words like 'hyper', 'cyber', 'wired' had a neon aura. That future has been whisked away. Now we talk of global warming, financial meltdown, and militant fundamentalism. Nor has the technology advanced as we expected: we have iPhones and Facebook, not VR glasses. Traditional art has retained its physical shell. Digital photography and websites are taken for granted as nothing special.

The past futurology of ISEA is a subject in itself, perhaps even a subject for a gently satirical painting. Digital paintings, drawings, prints – termed 2D art, or still image work – were themselves well within the orbit of early ISEA. But gradually they were seen as marginal, old-fashioned, unexciting, and in effect excluded. ISEA as a whole has always been ambivalent, even paranoid, about the perceived 'art world'. So what does a spy from that world of studios, galleries, and art magazines make of ISEA's progress? In my own case I have participated in ten ISEAs since 1990, and exhibited eight times with SIGGRAPH, yet remain resolutely a painter. I still don't know where I belong, but press on with making the works I want to make, and am as fascinated as ever by integrating the power of computer graphics with the resonances of painting.

The topics discussed at the last Belfast ISEA had moved far from the pre-occupations of the early ISEA meetings. Then 'computer art' was an isolated minority interest, somewhat at odds with the world at large. ISEA connected

composers, animators as well as visual artists from all over the world. At the first ISEA I took part in, twenty years ago, the topics were 2D art, animation, electronic music, and artificial intelligence. The novel formats emerging were the CD Rom and multimedia; then came interactive, virtual reality, and of course the web. At the 2009 ISEA in Belfast the keynote speeches covered social or activist projects, design, and fashion. Papers featured collaborative projects, helping communities bond through cell phones. There were hardly any 2D works on show, and the most attended sessions were on education. A first time visitor might have been puzzled that this was a conference on electronic art. ISEA was now primarily for the academic theorist or the community arts team.

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**Footnotes to the
Electronic Bauhaus 2010**

When I presented first in 1987 my concept of an Electronic Bauhaus, I pointed to the statement of Sibyl Moholy-Nagy that the school was the catalyst of the visual revolution for the twentieth century. The content and the dimensions have completely shifted since then towards greater scales, greater demands. Our actual environment enlarged towards the biosphere, mainly articulated and anticipated by researchers-philosophers like Vladimir Vernadsky (1863-1945) and Teilhard de Chardin (1881-1955). With Vernadsky the biosphere is as much or even more the creation of the Sun as the manifestation of earthly processes. It is the idea of space and the biosphere that enters into today's Electronic Bauhaus. To be a student of space means to be first of all a student of the biosphere.



Fig. 1: Diver with Light Balls. (Underwater Photo) Photo: Jürgen Claus



Fig. 2: Playing the Underwater bell tower (Underwater Photo)
Photo: Jürgen Claus



Fig. 3: Solar Sculpture Models by Jürgen Claus
Photo: Jürgen Claus

My own artistic work is related since the late 1960th towards Ocean and Solar sculptures and installations. Both these spaces have changed our visual conception of this planet and the planet system as a whole. We artists have developed strategies and materials for visual adventure in both spaces – namely light, inflatables, weightlessness, freedom of movement, integration of solar energy into our art. In my statement to the ISEA'94 Conference in Helsinki I proposed a „Biosphere Interface: Education for Advanced Visual Studies in the Solar Age“. If the change towards a Solar Age has to stabilize our societies, our economies and educational systems it must be a cultural one. Art is part of the continuous critical as well as creative reflection of our life within the biosphere.

It was in close collaboration with Dr. Wolfgang Schneider, the founder and organizer of the internationally acknowledged Computer Art Competition in Gladbeck, that I presented these topics in many lectures, articles and decisions during the last years.

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P31

A to X: Audience Experience in Media Art Research

Convened by Lizzie Muller and Peter Ride

- Lizzie Muller (au)
- Peter Ride (gb)
 - Katja Kwastek (de)
 - Christopher Salter (qc/ca)
 - Nathaniel Stern (us)

The importance of the audience as part of the media art event is widely acknowledged, but although interaction and embodiment are well theorised, we are yet to achieve a well grounded understanding of audience experience. It is fundamental to defining the context around which an art work has been made and shown. The panel asks how we understand the concerns of audiences and how they respond to concepts of creativity and innovation in media art.

**A to X: Audience
Experience in
Media Art Research****Lizzie Muller** (au)**Peter Ride** (gb)**Nathaniel Stern** (us)**Katja Kwastek** (de)**Christopher Salter** (qc/ca)

The premise of the panel is that understanding how an audience experiences media art is fundamental to understanding the impact of the art work. Too often the “idea” of the audience is invoked in media arts rhetoric in vague and general ways, and the effect that art works have is discussed in terms of expectation and supposition. This panel aims to move beyond these limitations and argues that we need to pay particular attention to the use and value of specific methods and approaches for studying experience. The panel aims to create an opportunity for practitioners and researchers from different perspectives to consolidate and develop a vibrant emerging body of knowledge about audiences of media art, which can empower artists, curators and academics

As discussions around the necessity of archiving and collecting new media work expand, it is arguable that future iterations of such artworks can only have cultural meaning if we are able to provide information on the context in which they were experienced: how and why audiences responded to them. This also raises issues about the way such information can be recorded and incorporated within documentation of art works.

The importance of the audience as part of the media art event is widely acknowledged, and so is the complexity of the many roles of an audience can have, such as user, collaborator, creator or deconstructor (e.g. Paul 2003; Graham & Cooke 2009). However, although concepts like interaction, embodiment and conceptual engagement are well theorised, (e.g. Hansen 2006; Shanken 2009) we are yet to achieve a well grounded understanding of audience experience, certainly not comparable to the research into the specialisms of other fields such as mass communication audience research (e.g. Jensen, 2002; Ang 1996) or museum audience research (Falk & Dierking 2000).

There is a growing number of researchers and institutions concerned with these questions. Leading scholarly research in the area has been facilitated by the Daniel Langlois Foundation (e.g. Jones and Muller 2007) and the

Ludwig Boltzman Institute (Kwastek 2008). This panel recognises the development of a critical mass in this area of research. It's objective is to consolidate this research and to help locate it within the bigger picture of media art practice and theory, raising questions such as:

- What does an understanding of the audience contribute to critical strategies and vocabularies for discussing and evaluating media art?
- How does our increasing knowledge about audience experience challenge and enlarge concepts of aesthetics in media art and interactivity?
- What can we know – and what can't we know – about audience experience?
- What different models or frameworks are emerging for conceptualising audience experience?
- How does an understanding of the audience impact curatorial and artistic practice?

The panel has been designed around specific case studies of practice to date. This is intended to enable a concentrated focus on how different methods have been employed to address audience research. The panel aims to raise questions about methodologies, including empirical methods and their deployment in curatorial and artistic contexts. The examples explore the role of the artist as investigator, examining how artists and curators may facilitate audience feedback and incorporate feedback as a component of artworks. The panel also addresses ways that curators may use information about the audience experience in the way they frame, present and document work.

The panel draws together an international array of artists, curators and art historians all involved in audience experience research:

Dr Katja Kwastek: art historian. Katja's research asks what are the goals of documenting audiences/for whom do we do it? How do we integrate the insights won into art historical analysis of media art, and do we have to redefine the relation between art history and sociology of art?

Position Statement: If we agree that aesthetic experience resides within the active realization of an interactive artwork, it also demands a simultaneous or consecutive reflection of the latter, and for purpose of research, its verbalization. Following up to her more general discussion of interactive art research in the morning panel, Katja Kwastek will present case studies of Blast Theory's 'Rider Spoke' and Tmema's 'Manual Input Workstation', to discuss the relation of active realization, aesthetic experience, documentation and research of interactive art, with a special focus on the relation of 'expert' and 'general audience' positions in the context of interviews and observations.

Dr Lizzie Muller: curator and researcher, Senior Lecturer at University of Technology, Sydney. Lizzie's research investigates audience experience from a curatorial perspective. She has adapted tools and techniques from Interaction Design to work with audience experience as a material, and was founding curator of Beta_Space, a dedicated "prototyping" environment for interactive art at the Powerhouse Museum in Sydney. She has collaborated

with Caitlin Jones to develop an archival approach to documenting interactive art based on the relationship between the artist's intentions and the audience experience supported by the Daniel Langlois Foundation and the Ludwig Boltzman Institute (2007-9).

Position Statement: Nearly a century ago the pragmatist philosopher John Dewey argued that aesthetic experience plays an essential role in helping us reflect upon and adapt to changes in our environment and our relationship to the world. This argument helps explain the distinctive aesthetics of media art forms, which critically engage with the transformation of human experience through new technology. How can curators respond to the importance of experience in the aesthetics of media art? Lizzie will describe two curatorial strategies: first the use of iterative prototyping to allow artists and curators to work with audience experience in production and presentation, second the use of video and interview techniques to create experiential documentation.

Peter Ride: curator and Research Fellow, University of Westminster, UK. Peter's research addresses how different organisations have a different understanding of their audiences and this is a 'framing' device that can affect how a work is encountered and experienced, for example how the audience experience of the same work in a science museum can differ from experiencing it in an arts festival. He also looks at way that audience research can be used to re-define the curatorial scope of an exhibition.

Position Statement: The role of a curator is often to 'open up' possibilities for artists to be inventive, innovative and challenging, and therefore focussing on reception rather than creation sometimes seems counter-intuitive. As a curator I have been involved in many projects that – while stimulating and conceptually challenging – clearly did not deliver for a large portion of the audience what they expected from the way the work was very sincerely described to them. Should this create a greater conundrum in new media arts than in other creative areas? Should conceptual complexity be considered in relation to functionality? These questions are articulated in various ways by audiences and demonstrated through their behaviours as well as through their oral responses. A proposition may be that the role of the curator extends to facilitating the audience to ask questions as well as gaining their feedback. Peter will discuss projects which have enabled curators to explore these issues around their practice.

Dr. Chris Salter: artist, Associate Professor, Design+Computation Arts at Concordia University, Montreal and researcher with Hexagram. His artistic work and scholarly research focuses on the ways in which theories and practices of performance can be used to understand the complex ontological and perceptual entanglements between human and technical environments. He has exhibited his work internationally and is the author of *Entangled: Technology and the Transformation of Performance* from MIT Press (2010).

Position Statement: JND (showing as part of the ISEA2010 RUHR exhibition) is a sensory environment for one person at a time in which total darkness is accompanied by extraordinarily small variations of sense stimuli such as vibration, light and sound at just differing perceptual thresholds. Its

performative frame already demands the installation's makers and curators to deal with the durational and singular audience experience aspect of the work – a tension given the almost shopping mall “event” like nature of most media art exhibition models. Moreover, the fact that the installation plays with sensorial experience in ways that cannot be articulated in verbal/written form while directly experiencing the work also challenges standard ethnographic methods (like semi-structured interviews, questionnaires) which gather audience response after the experience. Chris will discuss the process of making JND and the issues posed to traditional ethnographic techniques by such a performative sensorial work.

Dr. Nathaniel Stern: artist and writer, Assistant Professor at the University of Wisconsin – Milwaukee. Nathaniel's research combines traditional art historical trajectories with contemporary understandings of performance, interactivity and embodiment, in order to bring new insight to art and art criticism. How do we embody, perform, and interact with art in the gallery space, and what is at stake in how we move-in-relation?

Position Statement: While most critical analyses surrounding interactive art will explain that a given piece “is interactive” and “how it is interactive,” very little attention is paid to “how we interact.” How are audiences, literally and physically, “moved”? How, in these interactions, does the process of embodiment relate to, for example, architecture or language? How does the ongoing formation of each influence and enact the ongoing formation of the other? What do we learn about the emergent categories of body, space or meaning-making through these infolding relationships? Nathaniel will put forward a critical framework for engaging with interactive art, and utilize this framework to explore in-depth questions about the work of Camille Utterback.

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P 32

Latin American Forum II: Current Media Art Practice/Curators and Organisers

- Juan José Díaz Infante (mx):
Interrupted Realities
- Claudio Rivera-Seguel (cl):
Collaborative Commons: Latin American Interdisciplinary
New Media Initiatives
- Tania Aedo (mx):
(ready)Media: Towards an Archaeology of Media and Inven-
tion in Mexico
- Giselle Beiguelman (br):
Technophagic Emergence. Creative and Critical Trends of
Digital Culture

The “Current Media Art Practice/Curators and Organisers” panel problematises the role of curatorial processes in media arts in Latin America, looking for a contextualisation in the global context.

Juan José Díaz Infante (mx)

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Interrupted Realities

The present is not inherited from the past.

It is borrowed from the future.

Chief Seattle, Sioux Indian

Buckminster Fuller gifted us the metaphor of thinking of the Earth as a space ship, and our attitude as “pilots” learning to drive correctly this enormous ship through space. The way I see things: if we behave like aliens, we are doomed to push the wrong buttons.

Let me try to explain, briefly, a general portrait of the present of Latin America and how do I think there is a path to borrow from the future, to do this reflection, it is important the revision of the exact terms and definitions of a place that is different in time. This is in order to have a clear conversation.

I have chosen the quote of Chief Seattle in a very strategic way to be the start of this essay. A character that belongs to the Americas, but that does not belong to the term Latin America, even though he belongs to the original tribes of this continent. We fail to learn the virtues of Mestizaje, the attitude of incorporating, mixing and being able to see everyone. There is a need of tribal wisdom in a contemporary attitude that takes us out of a reality of fragmentation.

Latin America is a name, or a definition based on the language spoken, that excludes the original tribes or places like Belize that speak English as an official language. The term Latin America on itself has a problem of not being a good definition. As all things that do not start well, it fails to become a concept adopted by the people of Latin America and it fails to become a supranationality, an interesting concept that appropriated could go beyond nationality. Latin America holds over 500 million people, nonetheless it is still fragmented starting by its own definition.

1971, Salvador Allende, Chile. An example of an interrupted reality.

Salvador Allende put in charge Fernando Flores of a project called CyberSyn (Cybernetic Synergy) a control center designed to require information from every corner of Chile. They hired Stafford Beer a British scientist to put this

incredible concept together. A room that was designed very much like a Star Trek command center. A theory designed to have the secretaries of state making decisions in real time. A room with no pencils just buttons. At that time there were no computers to handle information like today, so in a place far away from computers, a lot of the work of processing information was done by human interface. A lot of the work of cybernetics was based on the work of Binner in the USA. Nonetheless, the theory of administration of the information was taken by Maturana, a Chilean biologist that theorizes on the information transmission at cell level.

The government of Salvador Allende falls in 1973 the exact day that this control room was going to be inaugurated. To have a parallel of what was happening in the world, in 1969, Arpanet was being developed in the USA, the diagrams were three circles that showed the first three nodes, UCLA, Stanford Research Institute and University of Utah.

Latin America shows a problem of timing, we would like to see the region in its path to industrialization. There is a strange phenomenon in how industrialized countries have written a manual of how to become industrialized. That manual is outdated and badly written since very few things have to do with cause and effect, you have to take in consideration that at the time of countries becoming industrialized there were no others prior to them holding the field. It did not exist the strategy of countries dumping their excess of inventory in other countries in order to bankrupt their local industries.

Fragment of the speech of Stafford Beer for the inauguration of Cybersyn,

[...] modern science and particularly electronic computing offer the government a new opportunity to treat the complex problems of modern economy. We have found that in the advanced countries, the power of science is not used yet. We have developed a system in our own spirit, what you will see today, it is revolutionary, not only because is the first time it is done in the World, but because it is a conscious effort to give the power of science to the people [...]

This speech was never held, primarily because of the fall of power of Allende in 1973.

To speak of the term interrupted realities, tries to illustrate in a three-dimensional way how the world is divided in spatial interruptions, from highly developed and industrialized countries to countries that do not own a satellite. The artistic reality and the technological reality of countries like Mexico are linked to different political moves, economical crisis. All these elements cannot be separated of each other in order to understand something like a digital culture.

In the early 90s, Ernesto Zedillo, the secretary of education of Mexico (later on president of Mexico) decided to decline the budget proposed for the installation of the first node of Internet in Mexico: he said that this thing called internet was only a fashion that soon would pass, no need to put money into that...

The interruptions of knowledge, communication, information, hurt the capacity of dialog. The future problem of the wars over water will be a problem of lack of capacity of dialog and not of the absence of the liquid. How technology is approached in Mexico and Latin America is of the essence, since you cannot travel in a boat or a space ship with a very small hole, even if the hole is in your cabin. The sinking is a fate for the whole ship.

In the 70s there were many dictatorships in the region, and in some cases like Bolivia and Argentina, there were two or three coup d'état a year...

In my view, art added to technology has to have a different definition in a Latin American context. In which a digital culture is a different tool and an artist instead of a museum, he or she belongs in the building of a social net.

Not necessarily the envisioned net of the North, but a net that can be efficient and useful for the region that is originated and not only as context to an alien net, done only for imitation without prior thought of its usefulness.

In the year 2009, 70 scientists of the international community wrote to the President of Mexico, Felipe Calderón to complain about the treatment of Mauricio and Humberto Terrones, two nanotechnologists, working in San Luis Potosí in Mexico. Sir Harold Kroto came personally to talk with the minister of science and technology. One of the issues was the putting together of a very complex microscope. Mexico had bought it and decided not to take it out of the box for 6 years. Felipe Calderón never replied to the 70 scientists, the microscope is still in the box, and the Mexican nanotechnologists were fired...

Concepts like networking, communications, information, and community take a different dimension. Not for what they are doing, but for the potentiality of the window of opportunity. Talking about a future museum in Mexico should not be talked as an immediate parallel like a museum in Portugal. The reason, concepts of ethnicity, customs, essential reality, survival, resources and corruption draw a different outline. Reality defined as a picture and as a future. The creation of culture is of the essence. The right culture.

The Channel 6 of July, is a TV channel started during the 90s, whose only ways of distributing their programs was through VHS copies. The channel 6th of July sold at that time over 4 million copies. Most of the work of this channel was opposition to the political ruling power. Canal 6 de Julio is video and it is border work. It is unique as a global phenomenon and on the other hand it generates a sense of community and is able to model society. Not necessarily or strictly from the art that hangs in a gallery, but from the action within society in the novel use of technology and its capacity to be efficient. 4 million copies sold in a commercial field are equivalent to Michael Jackson.

McLuhan said, an artist in times of slow change is a luxury, in a place of quick change is in the control tower. In the Latin American context the society is in a process of slow change trapped among a global society of fast change.

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Collaborative Commons: Latin American Interdisciplinary New Media Initiatives

The development of the “Open Culture” social phenomena can be exemplified by initiatives such as the Open Source Software Development Community, Creative Commons Copyright Alternative Licensing, Fair Trade Co-operative Business Models, Crisis Commons Disaster Relief Web-Platform and Transition Social Network Initiatives (Ireland and the UK), to name a few. Most of these social movements have emerged via the implementation of peer-to-peer self-organizational models, facilitated via modern communication technologies and motivated by the lack of contextualized, effective and lasting solutions to local social inequalities and concerns. This presentation analyzes and comments on the organizational interrelationships of three Latin American cultural initiatives from the perspective of the above mentioned, emerging parallel Open Culture social movements.

These three Latin America curatorial projects – OrganiRandom, Digital-Chile_08 and Bypass2010.org – have been carried out between the years 2006 and 2010. They all have incorporated collaborative and innovative creative processes within their organizational and creative structures. Even though the individual works that are part of these collaborative initiatives may deal independently with their own particular aesthetic and critical discourse, for the purpose of this analysis, I will only focus on the collaborative, organizational and productive aspects, leaving the formal and theoretical analysis of the works to be discussed at the ISEA2010 Latin American Forum.

As new technologies and techniques are rapidly evolving within and assimilated by society, their transformational consequences and effects have been perceived, analyzed, reinterpreted and represented in a complex array of forms and content by cultural practitioners around the world. Some of



these groundbreaking and innovative practices examine the nature of culture from a holistic perspective situating themselves at the leading edge of contemporary transformational experiences.

In parallel to these social experiences and throughout my personal creative practice, as both a cultural creator and organizer I have intuitively developed a multifaceted career that explores political and aesthetic issues inspired by Open Culture's organizational models and techniques. Some of these characteristics include: Co-authorship collaborations, open-ended aesthetics, and do-it-yourself productions.

Therefore it is not surprising that these international curatorial projects differ a great deal in their formal and technical presentations. Their general characteristics can be described as follows:

- OrganiRandom: Streaming improvisational networked performances.
- DigitalChile_08: Co-curatorial cultural exchange initiative.
- Bypass2010.org: Web-based public relational project.

In different degrees of engagement, each of these curatorial events deal with and are inspired by ideas emanating from the "Open Culture" movement, which promote non-linear, non-hierarchical and non-dogmatic cultural expressions and creative processes.

The 2006 OrganiRandom collaborative telepresence project presented at the "7e Manifestation Internationale Vidéo et Art Électronique" (Montreal, Canada 2006) was conceived, produced and implemented incorporating the principles of co-authorship, random scripting, improvisational techniques and local-autonomy. I will briefly touch upon the local-autonomy aspect of this project. This collaborative streaming initiative in its original proposal (4 events: Canada, Uruguay, Argentina, Chile) was designed so that each local

group would produce and define all aspects of the events (selection of artists, implementation of the event and creative content).

The Digital Chile_08 cultural project was presented at the “Festival Montreal en Lumiere” in march of 2008. This initiative was conceived as an international cultural exchange project between Chilean (www.artek.cl in Santiago and Valparaiso) and Canadian artists (www.sat.qc.ca in Montreal). Through a co-curatorial process we collectively established that the selection of works would be defined by each individual artist (within the venue’s physical and budgetary restraints). This mosaic of Chilean new media art commented on the expanding diversification of contemporary digital culture. This project also included a collaborative streaming performance and the sub-curatorial showcase of invited artists (video format).

Finally, the www.Bypass2010.org project, that uses a co-authorship methodology, was originally created for “La Biennale de Montréal 2009”, which had “Open Culture” as its thematic orientation. The original idea of this project was to create various Web-Based relational proposals by Chilean artists and then, through collective brainstorming sessions, develop and fine tune the final presentation platforms. The main focus of this project is to offer an Open-Platform for inclusive public creativity and social engagement. Through this open participatory creative process the project intends to comment on the elitist and dogmatic nature of contemporary culture.

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(ready)Media: Towards an Archaeology of Media and Invention in Mexico

I'm pleased to present the project *(ready)Media: Towards an archaeology of media and invention in Mexico*, initiated almost two years ago by Laboratorio Arte Alameda in collaboration with a number of curators, artists and researchers.

As one of the two spaces in Mexico City devoted specifically to media art practices or, as we prefer to say, those practices that engage a dialogue with the multiple relations between art and technology, Laboratorio Arte Alameda's archive has a lot to say. Our archive was not organized, lacking even the form of one a few years ago. Being extremely active in exhibiting and promoting, but most of all, contributing to connect the several media arts' communities in the country, systematizing was not a priority from the beginning.

It takes time for documents to be needed, and now, ten years later, we have the need to organize them. We wanted to deal creatively, critically and, above all, collaboratively with this task. First we set a specific physical space for it and begun to dig in to all the hard discs and drawers holding over ten years of intense production.

It is very important to mention that LAA's founding curator Príamo Lozada was the main contributor for those practices regarding curating, commissioning and promoting in Mexico. Embedded in a profoundly poetical style of curating and a deep understanding of both the national and international context, Príamo's legacy was widely spread. After his death in 2007 the need to read and explore the documents became ever more important.

On the one hand we wanted to explore the archive's documents and, on the other hand we sought to investigate the *deep time* intersections between art, science and technology in our geopolitical context. An intersection that can be tracked as deep as the sixteenth century, as Karla Jasso's Ph.D.

research on time computing in Mesoamerica can show. Naturally, we wanted to share this exploration; so the algorithm for (ready)Media is quite simple: an archive, a deep time history of intersections, and ongoing collaboration. Currently the archive of our documentation center has expanded to an exhibition, an audiovisual series in DVD, and a book. The audiovisual series and the book are being freely distributed for individual reference in art schools, media-labs, art centers and museums libraries, first in Latin America and Spain. It is now in the process of being translated for distribution in English speaking countries.

We were eleven people involved in the process of reading, reflecting and proposing additions to the current set of documents, resulting in seven audiovisual and sound programs being presented to the audience in LAA at the time. Among other collaborations for the book, we counted with the fortunate participation of thirty authors who delved deep in time to encounter *stridentist* poetry in the first radio transmission in the country; the post-revolutionary experimental films; the first paper on Cybernetics by Norbert Wiener, Julian Bigelow and Arturo Rosenblueth, Mexican physiologist; a paper on art and science by Dr. Rosenblueth; and the recently added paper *Caosmos*, by Mexican playwright Juan José Gurrola just to name a few.

At the same time, the audiovisual and sound series include over three hundred works, organized in the following programs:

- *Experimental Contemporary Audiovisual*, by researcher David Wood
- *Cine Povera*, by filmmaker-curator Jesse Lerner
- *Mechanics and Obsolescence in current media art*, by researchers Gabriela Mendez and Juan Pablo Anaya
- *Memorable and Familiar*, by artist Grace Quintanilla
- *Sketches, a Historical Revision on Videoart Curatorship in Mexico*, by researcher Erandy Vergara
- *Experimental Music, Art, Poetry and Sound Experimentation in Mexico*, by artists-curators Manuel Rocha and Israel M.
- *Voice Overs: five authors* (Ximena Cuevas, Ariel Guzik, Dyan Pritamo, Sarah Minter, Arcangel Constantini), by Karla Jasso and Tania Aedo

At this time the project is being shown in Laboratorio Arte Alameda's exhibition spaces, alongside a series of seminars and talks among curators, researchers and artists, with the intent of making (ready)Media a platform for discussion and reflection. The seminar "Located media" by Andrés Burbano as well as "Experimental cinema" by Jesse Lerner and lectures on a wide range of topics, such as cybernetics, technology and invention show the diversity of issues triggered by the project, rendering this starting point a significant contribution to the field.

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Technophagic Emergence

**Creative and Critical Trends of
Digital Culture.BR**



Brazilian production in the field of digital culture indicates an emerging technophagic tendency, a process that devours and grinds technology and which is mediated by a critical, creative use of the media. Such tendency appears in alternative economic models, artistic practices that promote other actions, and pirate systems devoted to collective uses of telecommunications.

Technophagy is not a movement, but a conceptualization that I've developed to refer to operations that mix tradition and innovation, unusual arrangements between scientific knowledge and artisanal lore, and micro-political actions on the appropriation of technologies. That tendency can be an initial version of a political and aesthetic practice that operates by means of the combination and the remodeling of equipment, the revalidation of the notions of hi and low tech, and the production of devices capable of promoting other forms of creation. Its context is the globalization and the process of digitizing culture at all levels.

The intensity of this process in Brazil is changing not only the economic and geopolitical status of the country in the world, but also the forms of relation with technological devices, including the social profile of those who have access to the Internet. Nowadays, this social profile is mainly constituted by lower-middle and lower classes (52%) based at LAN houses located in the suburbs and in slums (Ibope 2009, Brazilian Internet Steering Committee 2010; p. 244, Lemos and Martini 2009).

The social profile of access to Information and Communication Technologies was not the only thing that has changed a lot in recent years. The forms of production and diffusion of culture have also changed dramatically. These novelties led to several independent actions, such as Overmundo and Casa da Cultura Digital, which are projects with the aim of establishing circuits

to spread the cultural production. In addition, they led to the emergence of temporary networks devoted to the creation of devices that can generate another creative actions proposing new economic models.

It's worth mentioning the Circuito Fora do Eixo, a network of small initiatives in the music industry and devoted to the exchange of technology, conceived in 2005 by cultural producers from cities located outside the mainstream circuit of the Brazilian cultural economy, i.e., outside the Rio de Janeiro-São Paulo circuit. The network grew and today it has nodes all over the country, being responsible for many festivals, including international initiatives like the Grito Rock South América. In their own words: "It proved to be possible to produce in large scale in a self-sustaining chain, in direct contact with producers from other states through a network of information based in small units in favor of large stocks."

This wave of new production models occurs in the context of a remarkable growth in the purchasing power. From 2003 through 2008 the income of Brazil's poorest population grew 72%, what made 18.5 million people leave the poverty line, while other 32 million became part of richer segments. The impact of these changes on consumption capacity is undeniable and has created new social profiles in the C and D classes. Experts now call them "impulsive consumers" (M. C. Neri 2010; Nova S/B and Ibope Intelligence 2009)

The perverse effects of this sudden growth on consumption capacity are waste and the fast disposal of technological goods. The counterpoint to that situation is represented by flowing groups, such as Gambiologia.net, Metareciclagem, Estúdio Livre, and LabOCA, that combine the recycling of equipment and the exploration of open code software. These collective initiatives as a whole are configuring a hi-low tech aesthetic, with great potential for ecological and political agency. Such new aesthetic can be observed in works by artists Fernando Rabelo, Mariana Manhães, and Lucas Bambozzi, among others.

Mobile Crash, by Bambozzi, for example, addresses the realm of consumption giving the audience the role of a player in the planned obsolescence game. It is an installation based on four interactive projections that react to the presence of visitors. A rhythmic sequence of short videos of technological devices being crushed by a hammer, divided in 12 levels of intensity, exacerbate in response to the intensity of the gestures of the audience. The more we move, the more quickly symbols of luxury are turned into e-trash. The result is an interactive process that stresses a hypothesis by anthropologist Néstor Canclini (2006) who observes that the new communication technologies have expanded the notion of citizenship, incorporating consumption practices to its exercise.

This relation between consumption related to ICTs and citizenship comprehends certain pirate strategies, such as the one adopted by the Nova Baixada TV, a "clandestine" cable TV net that had 30 thousand clients in Rio de Janeiro who paid a subscription 10% cheaper than that of the official cable TV operator and had access to all the channels available. It's worth

reminding that, besides being cheaper, the net reached places where the corporations couldn't go, using their technological resources. In addition, the Nova Baixada broadcast pirate copies of newly launched movies and had its own programming with channels specialized in funk music and sports. The net used to generate \$ 300 thousand a month and had 40 employees. It was closed by the police recently, but new nets are emerging to take its place.

In spite of their different profiles, these several technophagic practices are a phenomenon directly related to the ongoing process of digitizing culture in Brazil. On the one hand, they are characterized as being in charge of an ironic reinvention of technology and, on the other hand, as having an agency capacity to spread alternative models of creative economy, thus proposing new circuits in the consumption market and, at the same time, bringing them into question.

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P 33

Media Architectures

■ Joonsung Yoon, Suk Chon, Hoyeon Lee; Jangwoon Lee (kr):
Superimposition of Old and New Media: "Light Wall," on Seoul
Museum of Art Project

■ Michael Pinsky (gb):
Public Programming: Exploring the Power of New Technologies to
Augment the Relational Aspects of Art within the Public Realm

■ JeongHo Park (de):
Silhouette Interference

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Superimposition of Old and New Media: “Light Wall” on Seoul Museum of Art Project

This paper introduces the 3D architectural projection project, “Light Wall” on the Seoul Museum of Art building. On the façade of the over 100 year old building, 3D animated art work is projected calculating and using the complicating contour as a part of a 3D artwork. The decorative façade is not suitable for a usual projection, but the project pronounces loudly the traditional façade using digital-based registration technology. This project does not tone down the physical specificities for the virtual image, but makes reality intermix with the virtual.

Usual beam projection for these decorative contours of the building was not possible, and we used different methods for the projection. This project, however, does not ignore the traditional figure of modern architecture. Rather, the project emphasizes the traditional façade using digital-based registration technology with 4 networked PCs, 3 DLP projectors and the architectural projection software (VVVV, multipurpose toolkit). 2D animation was made by the artist group, MIOON, and PERFORMATIVE transforms the work into the 3D work.

Architectural projection is a way of projection for video or image on the surface of real buildings or three dimensional objects rather than rectangular screens. “The Image Mill,” 2008 in Quebec is one of the examples. Large projection of images and films on the grain silos of the Quebec Harbor. Another example is “555 KUBIK,” 2009 in Hamburg, Germany. On the façade of the Hamburger Kunsthalle, moving images and animations were projected. Compared to the “Light Wall” project, those two projects were bigger, and the realization was done by separate companies. On the other hand, the “Light Wall” project has a few distinctive characteristics. One is that the project is



Fig. 1: Façade of the Seoul Museum of Art, Seoul, Korea

done collaboratively between the artist and the technologist from the preliminary phase. Second, the project used open source software, which is free to use for non-commercial uses, and leads to low budget. Third, the building structure is relatively complicated, figurative and modern styled traditional and historical.

There are several technical issues. The first issue is the projection-mapping. The actual structures of buildings are all different and unique, and a video should be produced for the projection in real time. The second issue is the virtual light and its shadow simulation. Before the projection project, the building should be simulated as 3D model to produce the virtual lighting and its shadow. In this issue, the camera tracking technology and the technology for getting the background's geometrical information make the process automatic. The third issue is the hand drawing animation. Following the figure and contour of the building, pre-designed animation should be prepared. Finally, in the phase of live projection, the input animation is projected in real time.

The building's decorative window panes, arch-shape gates, layered façade, etc. are real three dimensional objects, and the work projected was a three dimensional animated moving image (Fig. 1). At the first step, a preliminary test for 3D projection was needed to produce the miniature model and 2D design. In this step, 3D model data of the building were constructed. After the basic projection test to optimize the actual building structure and the digital data, 2D model design was gotten in digital format. As the second step, whole hardware and distribution system architecture was accomplished using 3 client computers and one server. There are two ways of distributing images from the source. One is to use Matrox TripleHead2Go, which is a graphics expansion device for multi-display system, and the other is to use server-client system via Ethernet. In the project, the server system was used, and three projectors were connected to each client PCs. All three cli-



Fig. 2: Light Wall, 2009

ent PCs are controlled under the operating server. The benefit of the system architecture is the flexibility of the total screen size by the number of client PCs. In the third step, an operating system was developed based on VVVV. The 2D design of the first step, however, produces unregistered images. The technology team created an original patch for 3D image controlling. It is one of the major technologies, called 3D video mapping. Methods for mash edit patch were developed to transform the point edit. The developed patch enables object files from 3D modeling software such as 3d MAX or MAYA to be exported, manipulated and projected in VVVV. In the fourth step, additional functions and effects for the animation were added. Applying effects, lighting and its shadow were possible. As the final step, 3D projection images and the actual building structures were adjusted. All actual windows are fitted to the image using pattern-based control (Fig. 2).

The Light Wall project is not a way of direct and simple projection and playing on a building, but a way of constructing the same virtual space with the actual building structure, rendering moving images in real time and projecting the reproduced animation on the actual building. Using highly functional graphic treatment technologies, analyzing the optical characteristics of beam projectors for optimizing the resolution and applying the post-image treatment to consider the illuminations of the site's environment and the texture of the building, this project was completed.

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Artist

Public Programming: Exploring the Power of New Technologies to Augment the Relational Aspects of Art within the Public Realm

New media, particularly the development of digital art has redefined notions of public space, a parallel virtual network in which art can be developed and presented. The artistic intervention and its context are consistent, framed within the same paradigm. Contrary to this virtual world, my interests lie within the real world encounter, how new technologies provide a new 'relational' platform that interweaves the participants and the artwork. The viewer/contributor can enter the work through a process of documentation and manipulation during the early stages of an artworks evolution, or at the point of its presentation, where the participant provides the final kinetic extension of the artwork.

My artistic practice often merges physical and virtual space to shift physical sites and existing architectures. The use of software and electronics is a key component, whether a simple DIY or a sophisticated bespoke software program.

The two main challenges raised by my practice are:

- How the use of new technologies, especially the use of digital networks and software can manifest itself in the tangible world as either permanent or temporary artworks.
- How the use of new technologies can provide unique structures and interfaces which exploit the contextual conditions of the work, particularly in terms of the social 'site'.

These questions are becoming increasingly pertinent in a context where many commissioners and the larger public remain skeptical that new media artworks can be sufficiently robust to be placed in potentially hostile locations whilst being able to engage the public in a meaningful way. There remains an ambivalent relationship between new media art and its potential audience, which is often generated through the way the encounter between the viewer and the artwork is orchestrated. My practice explores different modes of encounter, from the gallery to urban interventions.

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“Exist” can not express clearly that the relationship between architecture and human beings. In relation to each other, “which is facing the situation,” it will be a more appropriate representation. In this work a relationship with each other and the relationship to talk about any situation that is being created. In everyday reality, the components of buildings and building materials that are important in this work. This material simultaneously with the passage of time on one screen is composed of the accident scene to form one. Such moments of everyday life and look to each other can be combined to give the time to create a spatial configuration. In other words, the audience, even

**Fig. 1: Performance Examples**



Fig. 2: Windows and Architecture Screen Capture



Fig. 3: Architecture Screen Capture

the same material as the reality of the movement will be transferred. Now I live the life of Trier buildings are also used as the material is. The algorithm by which each is composed as incidental circumstances, time and place will be sentenced. In the real world of silhouette boundary points are made in the interaction. The projection shows a silhouette of a localized audience in the space of the building and will meet daily.

jeonghopark.de/silhouetteinterference/silhouetteinterference.html

P 34**ISEA2010
Education Workshop****Introduction by Roy Ascott (gb)****Coordinated by Nina Czegledy (ca/hu)**

■ **Nina Czegledy (ca/hu):**
**The Future of Education? Novel Incentives, Emerging
Trends & Hybrid Practice**

The Future of Education?**Novel Incentives, Emerging Trends & Hybrid Practice**

In the ISEA2010 Education Workshop the identification and discussion of specific key educational issues initiates the open exchange between educational experts and workshop participants. Roy Ascott's introduction on pioneering platforms for Ph.D. studies forms the initial base for the exchange. The contribution by knowledge transfer experts concerns relevant learning methods and accreditation, including Ph.D. studies and novel incentives leading to hybrid learning and interdisciplinary practice. While some of the issues are more relevant in a regional context, over the last years an ongoing global discourse became evident on these topics.

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The Future of Education? Novel Incentives, Emerging Trends & Hybrid Practice

Lately, more and more academic institutions require lecturers with advanced degrees; yet obtaining these qualifications remains a problem in several countries of continental Europe – leading to fierce debates on educational circumstances. What is our role in this environment and how do we proceed? Roy Ascott's Planetary Collegium initiative is a remarkable example of a pioneering international platform for Ph.D. studies. His introduction to the ISEA2010 Education Workshop forms the base of the discussion on the complexity of these issues. It is recognized that the complexities include numerous significant items including packaged e-learning, various business models and social technologies for higher education etc. Within the scope of this workshop however – by pragmatic consideration – the discussion is focused predominantly on various aspects of Ph.D. studies and hybrid learning.

From Europe to Latin America the tremendous growth in the higher education sector – especially in new media and interdisciplinary studies – produced new departments, the inauguration of new academic positions, brand new curricula and hybrid learning collaborations. Consequently, due to this radical shift in education, the learning environment has completely changed. Approaches to the revised paradigms vary from place to place and are often shaped by the nature of the organizations and/or institutions as well as financial and socio-cultural considerations. As George Siemens has noted in the recent Institute for Distributed Creativity (IDC) excellent e-discussion on the future of learning: "Over the last several years, a small group of educators has been questioning the centrality of courses for learning and has begun to explore alternative models." Deliberations on the prevalent trends and the future of education indicate that "innovation" combined with modified institutional boundaries and breakthrough partnerships are considered keys to the future.

To unpack the monopoly of higher educational methods by academia, hybrid learning is also investigated in the ISEA2010 Education Workshop. A palpable tension exists between academic and hands-on education, yet from Bogotá to Budapest an increasing number of professionals are deeply involved in the convergence of networked communication, arts and science and technology projects, environmental issues and urban space. They frequently work in cross-disciplinary teams, connecting from remote locations and collaborating in hybrid environments.

The variety of methods including extensive public access has been eminently explored in the recent international lab-to-lab meeting in Madrid with participants from all over the world. The development of an interactive map of a global network is in progress. The explosion of this new ecology has not been pre-planned; it is mainly due to a tremendous interest by the emerging generation, whose daily reality has profoundly changed and is often in conflict with certain rigid, outdated educational concepts. Today media-labs are significant contestants in knowledge transfer and hybrid education. It has been noted that the success of hybrid models stem from the fact that participants collaboratively design their program thus learning what they need. While such self-governing methods are obviously not appropriate for every situation, consideration of these changes in knowledge transfer remains a key issue.

The inclusion of hybrid models linked to academia is especially important, because limited funding, escalating class sizes and threatened course closures continue to be a serious challenge to effective education. In an era of fast technological growth and transforming art forms, there is an increasing need for educational flexibility. It is important to keep in mind that the profile of higher education in the 21st century is going to be very different to what it used to be. According to numerous predictions, higher education will be a much larger enterprise with an emphasis on livelihood-related programs. Are we prepared to handle this situation? Workshop leaders, participants and our public audience are expected to propose further questions as well as clarification of these points.

P 35

Augmenting Reality

- Diane Gromala, Meehae Song, Steven J. Barnes (ca):
 - Better Than Opiates

- Andrea Sosa, Laura Maiori (ar):
 - The Bit Expansion. Origin of Augmentation Operations in Mixed Realities

- Brass Art (Chara Lewis, Kristin Mojsiewicz, Anneke Pettican, gb):
 - Digital Doubles

- Jan-Peter E.R. Sonntag (de):
 - From the sonArc::project to C. plexus solaris. From Informing Plasma in vitro to Transforming the Solar Storm in 2012 in vivo

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Better Than Opiates

To assume that immersive “VR is dead” is premature. It belies a lack of cultural, historical and technological knowledge, or signals the peculiar foggy hangover that results from a common conflation, frozen in time – entanglements of a giddy technological imaginary with attendant utopian and dystopian visions, disappointments born of early technophilic hyperbole and the twinned forces of technological imperatives that march arm-in-arm with knowledge regimes that privilege the always-ever-new (Lyotard, 1985). Although research in VR has waned in the realms of Computer Science and Interactive Art, a diversity of other disciplines have quietly but significantly expanded its scope and everyday use. Further, ideas derived from early work in VR continue to inform other practices in ways that remain invisible and under-examined.

Our current work involves immersive VR, primarily because it has been shown to be consistently more effective than opioids in alleviating pain (Hoffman, 2009). That a specific form of media can be used to alleviate pain at all, and can consistently trump the widespread, centuries-long use of opioids is exceedingly provocative. Research in VR as a non-pharmacological form of analgesia appears to be limited to shortterm, acute pain. Though the reasons for why VR works to reduce acute pain is unknown, it is discussed in terms of “pain distraction.” Our work is distinctive because it addresses not acute but long-term, chronic pain – recently defined as a disease that is so widespread it is referred to as ‘the silent epidemic.’

Eschewing the more common perspectives that focus on teleological histories or on immersion and presence, we build on our experience in creating well-known virtual environments for artistic, cultural heritage and medical applications. We examine specific affordances of VR through the lens of a fundamental human experience – pain. As in disability and animal studies, to understand pain necessitates a radical questioning of ways of knowing and being – described by Cary Wolfe (2009). Pain teaches us that bodies do not respond in some “objective” manner (Scarrey, 1985). It brings to the foreground embodied perceptual and sensory roles in experience,



Fig. 1: Virtual Meditative Walk

The biofeedback signals – indicators of inner processes – continuously change the visuals and multilayered sounds, helping immersants learn to meditate, and thereby to better modulate their own sense of pain intensity.



Fig. 2: Dancing with the Virtual Dervish: Virtual Bodies, 1992-2003, Diane Gromala & Yacov Shair.

The more literal form of the body, derived from MRI studies of Gromala's body, continuously moves, according to immersants' physical movements. Not depicted are organs; though they appear to be small, vast, non-rectilinear, abstract spaces unfold, provoking proprioceptive disturbances.

many of which are usually beneath conscious experience (Leder, 1990), and underscores the mediating role of culture (Gatchel, et al., 2007). Thus, the inextricable interplays of artistic intent, immersant experiences and ascribed meaning, and “technical entities” (Simondon, 1958) are crucial in our work. Both VR and pain are boundary conditions that bring inner and preconscious processes into awareness, and scramble embodied perceptual processes and normative ways of thinking and being in the world.

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The Bit Expansion.

**Origin of Augmentation Operations
in Mixed Realities.**

INTRODUCTION

In the context of the Mixed Realities (MR) paradigm (half atoms, half bits), mixture is related to augmentation operations that bring new dimensions into our experience, a whole that cannot be thought of as a purely physical or purely virtual environment.

Is it possible to conceive augmentation as arising only from the mixture between the physical and the virtual? Or are other factors necessary for augmentation to happen and for experience to be perceived as a unified whole?

DEVELOPMENT

The Metaphor of the World as a Palette

The virtual rests on a numerical materiality characterized by abstraction and intangibility. The metaphor, with its capacity to establish analogies, i.e. to transfer a literal meaning to a figurative one by means of a tacit comparison, acts as a bridge to give substance to the intangible, making abstract realities concrete. Given the heterogeneity of the elements involved in augmented experience (atoms and bits), the metaphor acts as a common substance that merges and dissolves ontological differences. It favors a symbiosis between symbolic production and reality, facilitating the dissolution of the limits between these two instances.

The Metaphorical Interface as a Bridge for Acting in the World

The interface, the space where three heterogeneous elements converge (a person, an action and a device), allows the user to act upon the mixed environment. The greater the analogy between the interface design and

the grammar of the possible actions related to a specific phenomenon, the greater the possibility of fusion and the consequent perception of a real phenomenon with new properties.

The metaphor is the figure that favors fusion by transferring the logic of acting upon the everyday world semantizing devices and the behavior that these make possible (actions) in the constructed environment.

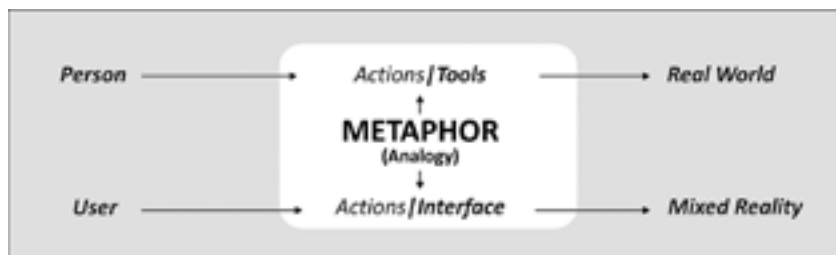


Fig. 1: Schema about the role of the metaphor in mixed environments.
Photo: Andrea Sosa & Laura Maiori 2009.

Immersion or the Illusion of Being inside a World

Immersion as an experience takes place when the impossibility to distinguish real and symbolic space, the behavior that is analogical to the laws of the physical world, and the environment transparency tend to make users feel they are within a modeled world.

Representation limits, scale modeling, sensory stimulation, interactivity levels and behavioral scopes are key dimensions for the construction of an immersion effect.

Augmentation Theory

In order to understand augmentation operations, we need to systematically relate the four variables mentioned before: matter, metaphor, interface, immersion.

For augmentation to take place, we must enter the illusion of a unified space with new properties (immersion level). The immersion effect is brought about by a precise articulation between (mixed) matter and interface (with its three components). Precision derives from the metaphorical approach, particularly from the degrees of analogy the metaphor absorbs from real, everyday life, and its subsequent transference to all levels of the work. The greater the level of semantization in the articulation of matter and interface, the greater the possibility that the appliance will become transparent and, therefore, that augmentation will take place.

CONCLUSION

In the definition of MR, special emphasis is placed on the degree of presence of the real and the virtual. From our perspective, the augmentation operation goes beyond a simple addition and exceeds the level of gradualness. Even though mixture is a fundamental operation, augmentation takes place

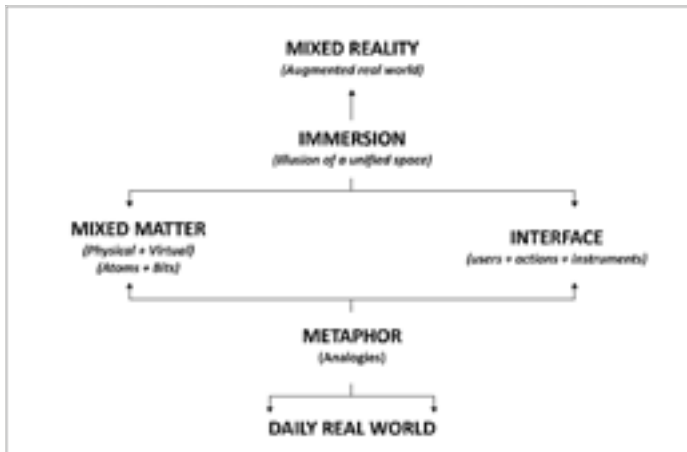


Fig. 1: Schema representing a proposed theory about the links between metaphor, matter, interface, immersion and mixed realities augmentation development.

Photo: Andrea Sosa & Laura Maiori 2009.

with the combination of other factors of articulation: the interface as a bridge between two worlds, the metaphor as a link between the concrete and the abstract, and immersion as the illusion of being within a unified environment. All levels must be present and interrelated for augmentation to happen. Without atoms and bits, mixed reality is not possible. In the same way, without metaphorical mediation to merge different components, the mere articulation of physical and virtual instances does not seem to guarantee the emergence of augmentation and the perception of a unified space.

(Full version of this paper: <http://www.scribd.com/lauramaiori>)

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Brass Art

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Digital Doubles

Replication of the self and engagement with liminal spaces has informed our collaborative practice. 3D body scanning, processing and digital printing proffered new methods of engagement as yet uncharted to capture ourselves faithfully. (<http://www.brassart.org.uk>) Test body scans suggested the potential to reveal public and private aspects of 'the self' – representing both the physiological and psychological aspects of a subject.

Digitised Doubles was a practice led enquiry funded by the Arts and Humanities Research Council (UK). The aim of the investigation was to examine how artists might creatively engage with the possibilities afforded by advances in 3D scanning, 3D software applications and 3D rapid prototyping to achieve self-portrait exploring the poise and unique character of an individual subject.

The enquiry was informed by two non-invasive 3D body scanning sessions in which the artists explored the creative potential of this technology. Imagining how each artist's body would fold around or into a virtual counterpart enabled us to individually enter a state of reverie where the real and the imagined could co-exist in this liminal framework. This performative process was determined by the dimensions of the booth and our ability to hold a position for the requisite 8 seconds.

Cloud data, derived from the two sessions, was collected, converted and exported into 3D modeling environments where it was painstakingly repaired and manipulated. This retained the faithful representation captured by the reflected light which was closer to a photographic image or cast than a portrait modelled from observation.



Fig. 1: Brass Art: Inside the Invisible

Nothing has made me realise the perceptual change between a sculpted figure and a 'real' print, formed from the coordinates of the artists' bodies, more than these semi transparent figures. They appear to be miniature facsimiles of the artists and at first sight make you blink in disbelief; more super-real than any Duane Hanson, Ron Mueck or waxwork sculpture. (Lilley, Clare, 2008, p11)

Virtual 3D objects were physically incorporated into each portrait to occupy the predefined spaces articulated in the scanning booth. The playful manipulation of the body's anatomical boundaries through metamorphosis coupled with the evolution of individual narrative tableaux, enabled the artists' portraits to shift between the real and the virtual – as they had in our imaginations. It is this virtual suturing that informs our practice and has led to a series of installations including *Moments of Death and Revival*, *Inside the invisible* and *Rooted and Established*.

An uncanny feeling is evoked by the digital doubles. This is true both for ourselves and those who know us, as well as strangers who often describe the memories they stir. The digital doubles enable us to occupy a place outside and beside ourselves. Our 3D replicas are a literal outworking of our narcissistic capabilities for self observation, rendering new meaning for the idea of the double.

As Freud observes,

The double was originally an insurance against the extinction of the self or, as Rank puts it 'an energetic denial of the power of death', and it seems likely that the 'immortal' soul was the first double of the body. (Freud, Sigmund, 2003, p 142)

In the kinetic work *Moments of Death and Revival* 2008, the 3D artefacts produced through this process became props in an expanded shadow play, where the artists were presented as replicated and morphed hybrids engaging in a mythical danse macabre. A travelling light allowed transformations to appear and disappear, the metamorphic elements to spring to life and the shadowy tableaux to unfold.

[...] in Brass Art's phantasmagorias, animated shadows have the quality of spatial singularities; they open another dimension inside the photographic world, a dream-like register. (Milne, Louise, 2008)

The desire to further explore the out-of-body experience of our virtual selves resulted in the three screen video installation *Inside the Invisible*. In this work each screen represents the space occupied by one of the three artists – their wire frame images brought to life, in turn, by the journey of a virtual camera. The resulting data field re-imagines the conjoined body of artist and animal as a grid like carapace, navigable as both an external and internal landscape, and through this passage an intimate and shifting relationship between each of the artists and their counterpart is revealed. This is emphasised as the sonic composition by Monty Adkins traces the visual exchange between their data and resonates with the unfolding narrative.

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The Centre for Research in New Music, University of Huddersfield, Ogle Models, RapidformRCA, Wicks and Wilson Ltd. UK., Manchester Metropolitan University, Edinburgh College of Art, Jay Payne, Alison Mealey, Daniel Roberts, Spencer Roberts

From the sonArc::project to C_plexus solaris

From In-forming Plasma in Vitro to
Transforming the Solar Storm in
2012 in Vivo

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In 2012 NASA scientists expect the next solar super storm, an “electromagnetic tsunami”, like in September 1859 when auroras could be seen all over the world and the new technology of electric telegraphy was disturbed by natural radio – decades before our radio had been invented.

In 2003 I have started my sonArc::project. Since then I have been exploring the question of the “domesticability of lightning” with the sonArc cycle – the coding or forming of high-frequency high-voltage plasma as a pure electrical / electronic interface, a direct yet bodiless connection to an electrical system and its medial-epistemic roots and changing formats. sonArcinterfaces are high-voltage-DC-arcs based on the studies of Duddell and Poulson or AC-arcs based on the inventions of Tesla around 1900. It is a reversal of de Maria’s “Lightning Field”. The system, an amorphous sculpture of electromagnetic waves, is scalable. When the lightning’s impulses connect in order to form long waves that resonate with the ionosphere, the weather becomes modelable.

Thus, the most important medium in the 21st century, that is electricity, has physically no materiality in its heterogeneous manifestations. Materialism has lost its material. “Electricity is the pure purpose of the form that frees itself from it, the form that begins to sublate its indifference”, writes Hegel. Ever since electricity began to be systematically investigated. It has raised an ontological problem – alongside with Hegel, Marx and Engels who also attempted a definition of this “fluidum” in order to leave no scope for metaphysical speculations. (Meanwhile, ontology founders upon electricity, and it, immaterial, increasingly vanishes from the collective consciousness over the course of the century: electricity has become nothing more than a

crude carrier of energy that drives locomotives and kitchen appliances. In its wake the electronic disappears, giving way to the digital. But what is numbered and calculated there and what does it flow upon or is it transmitted by? Where are the transitions?

Thinking the media in art can mean letting the “at-hand-ness” of their medial apparatuses and their simulation enter into their form, or integrating the paradox of their medial materiality, for example that of the electrons and their interactions, into the form – plasma as an amorphous state.



Fig. 1: 1 sonArc::ema, WKV, Stuttgart 2007 Photo: artist / 2 WHITEph, Bethanien, Berlin 2004 Photo: A. Messmer / 3 C_plexus solaris 2012, Modell



Fig. 1: 4 sonArc::ion, TESLA, Berlin 2005 Photo: S. Vidè / 5 sonArc::ema, ars electronica, Linz 2008 Photo D. Gelfand / 6 sonArc::ema, WKV, Stuttgart 2007 Photo: de Waha

Selim Lemström built the first and only machines on a mountain in Lapland which created artificial induced aurora borealis. In 2009 I acquired the rare original three volumes of Lemström’s scientific studies from 1886/87. Based on inventions and ideas of Nikola Tesla, explorations of Lemström and the actual NASA and ESA research on SPRITES (= transit luminous events in between the tropo- and ionosphere) and their radial echo in natural electromagnetic ELF (Extremely Low Frequency) waves, we are transforming atmospherical plasma live stream data from spaceweather labs into ultrasonic and plasma-modulated air and high frequency electrical fields within space which let fluorescent substances and tubes glow. You can perceive this for example in my current blackcube installation at Laboral in Gijon, Spain. “Sferics” are the radiosignals from northern lights transformed into sound. Their hearable soundfigures are “whistlers” and “cracklers”. The inuits

could hear the aurora borealis which Alexander von Humboldt in the 18th century also mentioned. “The whistling crackling noise which sometimes accompanies the aurora is the voice of these spirits trying to communicate with the people of the earth,” the anthropologist E. W. Hawkes reported about the “heavenly regions” of the Inuits in 1916.

With sonArcs, huge spherical horns and HOSOC, a hovering sound architecture Thomas Reinke and I have patented last year, we are going to transform the solar storm in 2012 – natural radio music – live into an space weather opera during the solar storm at night on an open field: C_plexus solaris – “victory of the sun!” – 99 years after Malevitch, Matyushin and Kruchenykh’s nihilistic futurist opera.

P 36

Software for Artists

■ Tom de Smedt, Frederik De Bleser, Lucas Nijs (be):
NodeBox 2

■ Giles Askham, Luke Hastilow (gb):
Cubed. A Networked Physical Gaming System

■ Christian Jacquemin, Benjamin Lee Martin (fr):
■ Interactive Animation of a Largescale Crowd for Art Installations. The Case of Humanography

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The Experimental Media Group is a research group at the Sint Lucas School of Arts in Antwerp, Belgium. Our ongoing effort is to produce computer graphics software that allows more people to express themselves visually and creatively without being restricted by a lack of expertise or user interface limitations. We draw inspiration from domains such as artificial intelligence, cognitive science, linguistics, biology, toys, in an attempt to define the nature of creativity.

Traditionally, software applications for computer graphics have been based on real-world analogies. Each icon in the application's user interface represents a concrete object – a pen, an eraser, scissors, etc. This model raises creative limitations. For one, you can only use the features as the software developers implemented them; creative recombination of tools is impossible when not foreseen. The classical solution, adding more features, is a cat-and-mouse game that complicates the software with each version. Furthermore, the software's possibilities are also its limitations: users will tend to think along the lines of what is possible and not about what they want (Cleveland, 2004).

Combinatory software

In 2002 we released NodeBox (<http://nodebox.net>), an open-source application that creates 2D visuals based on Python programming code. In 2009 we released the beta version of NodeBox 2 (<http://beta.nodebox.net>), an application that generates visual output based on programming code, a node-based interface (Lee & Parks, 1995) or natural language (i.e. English). In the user interface, building blocks (or *nodes*) can be connected to produce interesting visual effects. A node is “concise,” it represents a single operation: rotate something, adjust a colour, create an ellipse. However, a node has

no fixed purpose. Or rather it has many purposes that depend on the other nodes attached to it. Creativity is playfully encouraged by allowing users to combine nodes in different ways.

New nodes can be created by bundling a network of existing nodes into a group or by writing the Python code from scratch. This essentially means that each existing node can be the starting point (or prototype) of a new node.

Semantic network for creativity

A principal component in the NodeBox 2 project was the development of a set of algorithms to simulate human creativity. Using a memory-based shallow parser (Daelemans & van den Bosch, 2005), a semantic network of commonsense (Sowa, 1991) and heuristic search techniques, the system is able to perform conceptual brainstorming based on natural language input. Essentially, we use a database of what things look and feel like, called "Perception" (<http://nodebox.net/perception?bat>). Concepts are related to each other in a semantic network. For example, a few rules that describe a concept named "rose": rose is-a flower, red is-property-of rose, rose is-related-to romance. Techniques from graph theory (Dijkstra's algorithm, 1959, Brandes' betweenness centrality, 2001) are used to retrieve specific clusters of concepts and the pathways between them.

Some concepts are properties of other concepts. For example: dark is-property-of evil, evil is-property-of Darth Vader, fuzzy is-property-of cat, romantic is-property-of France. For a given property (e.g. creepy) and a range of concepts (e.g. animals) the system is able to select those concepts from the range that best resemble the property (i.e. the creepiest animals): octopus, bat, crow, locust, mayfly, termite, tick, amphibian, arachnid... No fluffy bunnies or frolicking ponies there!

Interestingly, the Perception module describes a bat using a *black* property and some relations to *cave*, *evil*, *night* and *radar* – but there is no explicit *is-creepy* property for this animal. Instead, the system infers a causal chain (Schank & Abelson, 1973) where bat is a *dark* thing and where dark is pretty creepy. But where does *dark* come from? For the bat, its direct relations to black, cave, evil, night and radar implicitly lead to other concepts such as Darth Vader, dark, dangerous, pessimistic, cat, airplane, sky, ... even though no one has explicitly defined any kind of relation between bats and Darth Vader (someone did however add relations from black and evil to Darth Vader). All of these concepts together make up the bat-cluster. It is the "conceptual halo" (Hofstadter, 1996) that the system takes into account when thinking about bats. This flexibility allows for a wide range of possible solutions when analyzing bats in different situations. The module will inspect all the properties of the entire bat-cluster (dark, black, evil, negative, brown, sad, deep, bad, ...) and measure each of their distances to *creepy* using Dijkstra's shortest path algorithm. The total score is an indicator of the bat's creepiness.

We think this method can assist users in acquiring inspiration for creative ideas. For example, by collecting images of bats and octopuses for a *creepy* artwork, suggest Underware's "Sauna" typeface when the user needs an *elegant* font, make a sketch of a logo for the city of Brussels that resembles a *toad*, and so on.

Acknowledgements

The prototype for NodeBox 2 was developed in collaboration with the Computational Linguistics & Psycholinguistics research group at the University of Antwerp, Belgium, and funded by the Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT) and a consortium of 13 Belgian companies active in the creative industry.

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Cubed

A Networked Physical
Gaming System

Commissioned by Folly as part of its Portable Pixel Playground (PPP) project, Cubed is a networked set of gaming objects that enable the exploration of diverse physical spaces and helps to develop relationship-building skills. The project was launched at the Abandon Normal Devices (AND) Arts Festival held at Grizedale Forest Park, Cumbria, 2nd April 2010.

Cubed makes use of recent advances in embedded technology to deliver a unique platform for kinaesthetic engagement and creative play. A set of eight programmable plastic blocks – wirelessly interconnected to form a meshed system – Cubed enables a range of different individual and team-based games and offers the capacity for further game developments utilising feedback and input from participants.

Conceived as a system of Cellular Automata, Von Neumann (1966), Cubed enables populations to work as open systems of communication. In such systems programs can exist across individual components or nodes. Rather than standing independently, each cube benefits from its changing relationship with others in the system. Such organising principles can be extended further, by taking into account each player and their relationships with other players, as well as the associations between players and cubes. Taken as a whole, these interactions form a complex web of reflexive relationships, heterogeneous assemblages of playful engagement.

Each cube consists of a hard-wearing translucent plastic housing, containing a Printed Circuit Board (PCB) that hosts a Microcontroller (μC), battery, interface electronics and transducers. On each face, an infrared LED and photodiode form a short-range transceiver, facilitating communication between cubes and detecting surface proximity. The primary user feedback method is an RGB LED array diffused to illuminate all faces of the cube. Integrated peripherals within the μC enable communication, sensing, data storage, and software control in response to hardware events.



Fig. 1: Colour Cube Photo: Giles Askham

The software running on each device is architected upon the automata-based programming paradigm utilising Shalyto's (1991) approach in which distributed Finite State Machines (FSM) interact to form a complex, self-organising system. Each device communicates and senses using event-driven procedures in order to maintain an environmental model of the gaming system as a whole. It is this model that determines game state transitions and thus the state of play.

The selected game in play is actuated through a particular physical interaction; e.g. hiding the cubes under clothing for a specific time period. Games are written as FSMs, and a structured high-level scripting language is in development to support open and accessible game authoring. Future technical developments include wireless induction charging and software re-programmability via infrared (IrDA), enabling each device to become a completely wireless entity.

The AND festival provided an opportunity to field-test and observe Cubed in use. Members of the public were able to play two games, Colour Cube and Treasure Hunt. Colour Cube (see figure 1.) is a simple mimetic game in which participants match the colour of cubes to that of a system-allocated control cube. The control cube cycles through each of its six colours periodically and the colour of the remaining cubes is determined by their orientation, which players change via physical interaction.

In Treasure Hunt, six cubes are hidden in the local environment and the two remaining cubes are given to two teams or individual players. Each of the cubes in the local environment takes on a different colour, and the

players' first objective is to find the hidden cube that matches the colour of their own. When these two cubes are placed in proximity to one another, the colour of the players cube changes, giving them the colour of the next target object. The first to find all of the hidden cubes wins the game.

There was a positive response from the public to both of the games and the tactile, physical nature of the system was commented upon. The system has since been used in a variety of contexts as part of the wider PPP project. Treasure Hunt was effectively used in a museum setting, enabling the exploration of various exhibition displays. It would seem apparent from this informal feedback that Cubed is effective in its aims of moving away from desktop paradigms of sedentary behaviour, and that it provides an opportunity for a physical activity enabled by technology.

Cubed is currently in its second phase of development, aiming to utilise advanced digital manufacturing and implementing 32-bit embedded micro-controller technology. Cubed seeks to carry out computation in the physical realm, and to provide a unique form of engagement. It is a new object to think with, and may even provide us with a window onto the machinic phylum, DeLanda (1991) of non-linear systems of interaction.

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Interactive Animation of a Large Scale Crowd for Art Installations: the Case of Humanography

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The animation of large crowds is very appealing for interactive digital art because it offers a realistic representation of a public space through its social and affective life. We present an architecture for a sprite-based rendering of a crowd of silhouettes and its external control through behavior scripts. This architecture is illustrated on an installation of Benjamin Lee Martin called Humanography that depicts a collection of humans in their every-day environment performing easy-to-identify activities. Humanography is an interactive art installation that shows a world where everything has become transparent, everything but humans. We humans are the only visual markers in an invisible world, our world, earth. [Fig 1]

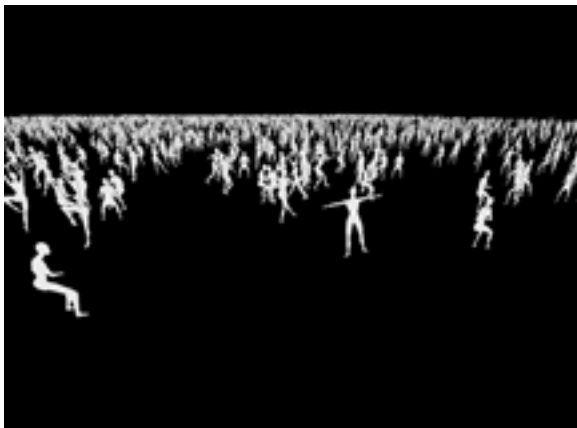


Fig. 1: Humanography artwork by Benjamin Lee Martin, overview of the animated crowd

Humans are accomplishing routines related to ordinary life such as walk, sit, run, work on a computer, or dance. If an animation is interrupted to be followed on by another one, an intermediary animation is triggered to allow for smooth transitions. A global parameterization of the installation is possible according to external events such as human control, measures of the ambient data, or remote data transmitted through the network. These parameters control how long humans stay in a loop in average, they control the distribution of humans on their activities, the speed of the loops, and the distribution of male and female avatars.

Humanography raises issues in digital art that are related to the complexity of animating a large number of virtual avatars with a high frame rate and soft animations. These issues concern rendering, animation, and control.



Fig. 2: Texture of predefined pauses used in sprite-based animation

Rendering

When dealing with complex structures (complex geometries with complex dynamics and physics) such as smoke, clouds, or fire, computer graphics calls for image-based rendering. It consists in replacing the rendering of a 3D model by an image obtained by an off-line rendering of the 3D model in a similar position or by the camera capture of a real object. In Humanography we use as images, silhouette renderings of Poser generated 3D models of humans. These images are stored on large textures, in which each RGBA channel carries a set of pauses (silhouettes are black and white). The silhouettes are rendered by Virtual Choreographer on so-called sprites: rectangles textured by these silhouettes and always facing the camera whatever its position inside the crowd. [Fig 2]

Animation

When dealing with complex animations such as the human body, computer graphics uses motion capture. The problem with motion capture is that it is restricted to the reproduction of the gestures that have been recorded. To alleviate this problem, animation in Humanography is based on loops that

repeat a sequence of gestures until another sequence of gestures is likely to happen. Through intermediary animations the avatar performs a continuous animation between the two different loops. Each animation is based on the motion of a naked Poser 3D model based on keyframes obtained from motion capture. Only the silhouette of each video frame is used and stored in large textures of frames.

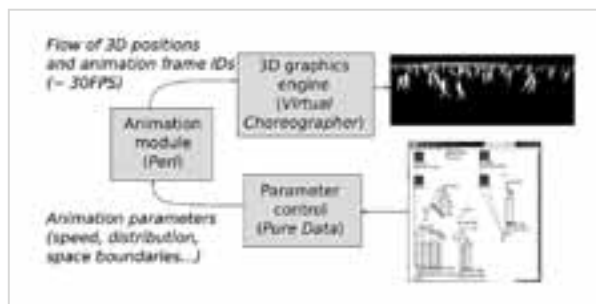


Fig. 3: Architecture for interactive graphic rendering

Control

Animation parameters (duration, distribution of the animations among the avatars, speed of animation...) are used by an external animation module in Perl to control the loops of the avatars and their displacements on the virtual floor. The animation module ships the data for the animation of the avatar through the network. It receives parameter values from a control program in Pure Data that can link the parameter values to any source of information such as the visual analysis of a real crowd, temperature, wind, light, manual control, music analysis. [Fig 3]

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P 37

Taking Action – Sociopolitics and Media

- Evelin Stermitz (at):
ArtFem.TV [www.artfem.tv]. Feminist Artistic Infiltration of
a Male Net Culture in Context of Art and Feminism and as
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ArtFem.TV [www.artfem.tv]

**Feminist Artistic Infiltration of a Male Net
Culture in Context of Art and Feminism and
as Cyberfeminist Action**

ArtFem.TV is an online television programming presenting Art and Feminism. The aim of ArtFem.TV is to foster women in the arts, their art works and projects, to create an international online television screen for the images and voices of women. ArtFem.TV is a non-profit artist run ITV and media art portal about art and feminism and has been founded by Evelin Stermitz in the year 2008. [Fig. 1]

Feminism and feminist art finally came to the forefront during the times of liberation and different political struggles in the late 1960s as a public debate, spurring a discourse to rethink the position of women in our society. One of the main questions was – what makes women different from men, and in point of art – what makes women artists and their art different from male artists. Women reflected upon the patriarchal social system, in history, in art history and in current affairs. It was a great benefit for later developments and changes, although it was a big struggle. Feminist art cannot be understood apart from this struggle. The term ‘feminism’ in connection with art should be used in the sense of understanding art works in a way of a female perspective, which, while not excluding the struggle, is more concerned with creating a recognition of a female position, in either counterpart or rather subject position. This position is a critical engagement with gender issues and views art as a socio-political matter.

Linda Nochlin wrote her article “Why have there been no great women artists?” in 1971, and gave an impetus for numerous published histories of women artists. A tremendous momentum for feminist scholarship concerning women in the arts ensued, offering the work of many more women artists overdue recognition.



Fig. 1: ArtFem.TV, screenshot, Evelin Stermitz, 2010. Photo: Courtesy of the artists.

We could say that the social conditions have changed enormously to facilitate more female participation in the arts and greater recognition of women artist's merits. But some people might suspect instead we have watered down or altered old notions of greatness and genius. (Freeland, 2001, p. 88)

Feminists criticized canons as the enshrinement of traditional ideas about what makes for 'greatness' in art, "[...] and this 'greatness' always seems to exclude women." (Ibid., p. 89)

The first two decades of art and feminism are seen as a revolt against male artists and their politics of production, consumption and targeting art, as well as the male-created gaze and male-dominated society. Female artists now find themselves concerned with evolving art in an aesthetics and with strategies including the social discourse. Feminist art has gained a relevant status and is highly approved and legitimated as an ongoing debate. These new ways of viewing the position of women and women artists in a socio-cultural context and in a critical philosophic manner is no longer defined as a revolt against patriarchal systems, rather it is accepted as a debate concerning disclosure and deconstruction of sex and gender in a patriarchal system, and reflects both construction and discourse within an historical context.

Although there is little consensus among women at the present time about where to go next, [...] – contemporary art by women reveals the formulation of complex strategies and practices through which they are confronting the exclusion of art history, expanding theoretical knowledge, and promoting social change. (Chadwick, 2002, p. 422)

New media offers new possibilities and chances, but also comprehends old restrictions and patterns. Works in the field of new media, feminism and art is a way to subvert the public economic tradition and offer new views, perspectives and possibilities to use new media with female agendas to undergo a shift from the male technocratic society, where knowledge, money and power go in one hand to strengthen male interests and visions. Cyberfeminism can be an answer to tech-malestream, whereby core cyberfeminist actions are aesthetic and artistic strategies, not only as deconstruction of representations of gender, but also of traditional concepts on the net and in the institutions of tech-culture. Terms of these practices are to recode, remap, relocate, reconstruct. Cyberfeminist projects do not work as a massive front in a manner of counter cultural movements, they are subversive, infiltrating the mainstream with ironic breaks, citations and deformations. (See: Draude.)

ArtFem.TV is an attempt to break with a male dominated net-culture and media landscape to highlight women's emphases in art and media works.

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P 38

‘Press Delete’ – The Politics and Performance of Spamculture

Hosted by The Art of the Overhead

- Kristoffer Gansing (se):
‘Press Delete’ – The Politics and Performance of
Spamculture
- Camille Paloque-Bergès (fr):
Proto-Spam. Early Forms of Spam as Vernacular Perform-
ance on Usenet
- Finn Brunton (gb):
■ An Infinite Continuum of Spewage. Bayesian Filtering and
the Reinvention of Spam
- Tony Sampson, Jussi Parikka (gb):
Learning from Network Dysfunctionality. Accidents, Enter-
prise and Small Worlds of Infection

A combination of research presentation and artistic intervention, the ‘Press Delete’ panel/performance expands the common format of conference panels through a dynamic double movement: being simultaneously on and of spam, it reflects the fragile socio-cultural negotiation at the heart of filtering ‘meaningful’ discourse out of informational flows. A critical garbage-archaeology, illuminating ‘dark sides’, ‘unintended consequences’ and creative acts connected to spam.

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Performance of
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Spam, you know it when you see it, at least this seemed to be the implicit assumption of Bill Gates when he in his 1998 article 'On Spam: Wasting time on the Internet' encouraged Internet users faced with unsolicited e-mails to 'press delete'. A few years later, at the 2004 Davos World Economic Forum, Gates bravely announced that 'Spam will soon be a thing of the past' as Microsoft was now introducing software that would make spammers 'pay' through a backlash effect on their computing power. From simply pressing delete to employing Bayesian e-mail filtering, the sheer plurality of methods proposed by Internet security companies to dispose this immaterial waste product, are perhaps at their most useful as testimonies to the inherent mutability of not only the object of spam but of networked communications at large. The endless quest of anti-spam research in defining and eliminating spam simply reflects the fragile socio-cultural as well as economical negotiation at the heart of filtering 'meaningful' discourse out of informational flows. As a variable object ranging from fraud letters, unsolicited bulk e-mails to malware – spam has remained a marginal phenomenon in contemporary cultural analysis. With a notable exception from Alessandro Ludovico (2005), it is foremost artists who have critically investigated the meaning of spam and thus seized on the long tradition of turning trash into art which can be traced from Chaucer's medieval 'fecopoetics' (Joy, 2008) to the readymades of Duchamp and other recontextualising acts of the 20th century avant-garde. The recent anthology "The Spam Book" (Parikka & Sampson, 2009), Finn Brunton's Ph.D. "Spam in Action" (2009) and the research of Camille Paloque-Bergès shows however that critical garbage-archaeology into networked media ecologies can illuminate 'dark sides', 'unintended consequences' and creative acts connected to spam which migrate from the margin to the centre of our understanding of digital communications.

Given the current global focus on climate change and the resurgent interest in waste management, it's perhaps only inevitable that also the purported trash of network culture becomes a hot-topic. In fact, 'waste studies' seen as not only from the environmentalist perspective but from the perspective of political and cultural-economy is a long established tradition: Marxist discussion of capitalism's 'waste products', Bataille's and Klossowski's

libidinal economies of excess, the culture studies approach taken in Michael Thompsons seminal "Rubbish Theory" (1979) and later by Gay Hawkins in "The Ethics of Waste" (2006), and on to the phenomenological philosophy of Greg Kennedy's "An Ontology of Trash" (2007). A lesson learned from this vast body of work is that media scholars' attempts at classifying spam as the 'noise' of cybernetic information theory is clearly reductive, even if that noise is being celebrated in academic or artistic intervention. Cybernetic media theory miss the point of the fundamental ambiguity of waste: the negotiation of meaning at the heart of communicational consumer societies which can be attributed to the old saying that 'One Man's Trash Is Another Man's Treasure'. The actuality of this perspective today is clearly evident in the hyped corporate interest taken in the 'waste economy' as a strategy of the new green capitalism to seize on every opportunity to re-purpose waste products into new uses.

As Victor Margolin has shown with his recently published 'Waste Manifesto', the contemporary model of the economy of waste stresses the 'need to create a flow – through society in which all waste – natural and synthetic – is reused'. This would indeed classify as a truly cybernetic model of waste which signifies a change in the cultural perception of trash and rubbish – not as Michael Thompson conceptualised it in 1979 with his famous three-step model where all things go through a transformation from being Transient (declining in value), to being Rubbish (no value) in order to finally resurface as Durable (increased value) – but rather as a conflation of this model in an understanding of waste as being any piece of modular information ready to be remoulded and remixed, regardless of the contents or meaning thereof. On a bit torrent tracker, a connected .avi file is potentially a collectible film at the same time as it is potentially just another piece of junk data soon to suck up space on your harddrive and upload ratio on your Internet connection, regardless if the actual film contained in the .avi is indeed a rare cut of Tarkovkij's *Stalker* or an Italian 1970's trash flick. In the same manner, examples from Usenet flame wars to Facebook narcissism show that all socially 'meaningful' electronic communication has the potential of becoming spam-like. What then in the face of electronic trash is left to do than to sit back and simply press delete? The other options are there for those who dare to depart from waste, trash and spam as radically relational concepts whose meanings are open for negotiation. As Gay Hawkins formulates it in her "The Ethics of Waste": 'Rethinking waste means rethinking all the practices that blind us to the reality and the possibilities of what remains.'

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Proto-Spam. Early Forms of Spam as Vernacular Performance on Usenet

As a form of unsolicited advertisement, spam relates to offline media strategies. But spam has its own vernacular archeology, rooted in the folklore of the pre-Web Internet. Identifying proto-spam needs not searching for the first ever spam, but researching its primal media language forms and practices, at the level of discourse and software, context- and community-related, pre-institutional – i.e. a vernacular use of the Internet. We research sub-cultures from the depth of the pre-Web Internet (especially Usenet) on the stage of interpersonal communication, while questioning “*Vernacular [as] crucial to [an] interest in power; in a community’s vernacular discourse are in-sights into its conception of itself, its negotiation of its identity, and its interactions with other communities*” (Flores, 2009 [1]). With the help of a Media Archeology approach (Ernst, 2006), we dig out the experimental layers in the history of spam.

A re-occurrence of unwanted information as intrusion in the Internet as a second “home,” the network where we live as individual, spam is seen as impersonal, lacking individuality, despite the advances in agent technologies helping tracing users’ activities and identity, in order to customize online advertisement. Being spammed feels like communicating with robots. According to Brad Templeton, a Net veteran and Electronic Frontier Foundation board member: “*We have a spam problem because of mass mailing. Personally written mails, no matter how annoying, can never mathematically be a problem for us*” (Templeton, “Why Bulk from strangers is the best definition” [2]). Is spam ruled by numbers? Actually, mostly by programs. How can interpersonal communication be programmed? Or, from a cultural point

of view: how do network users deal with the idea of communication being programmed?

Impersonality is closely linked to automation. Templeton finds the first occurrence of the word “spam” within the MUDs, an early online game and social network to call the typing in a chatroom the same sentence over and over, or inserting repetitive text with the help of a program (a bot). Repetition and annoyance, just like in the Monty Python “spam” sketch, the most probable origin of the term (Templeton, “The history of the term spam on Usenet” [2]), are disturbing but also playful in terms of meanings and rules of network communication. It introduces confusion as to who’s talking (a robot or a user?) and what is talked about (redundancy and noise blur the boundaries of information).

Recursive mimicry (users act as bots acting as users) finds its favorite battleground in Usenet folklore, where Templeton goes on investigating the origins of spam. Automation and recursion are literary figures encoded in a communication system being experimented at the vernacular level. The art of flaming, for instance, is autogenerative (arguments produce more arguments) and autoreferent (trolls are flammers who create polemic for the beauty of it). Often, Usenet master flammers are even suspected to be bots themselves, and bots are mistaken for real users, such as Mark V. Shaney who generated realistic speech based on net.singles conversations. Networked interpersonal communication is actually a problem of *persona* communication – mask and performance. How you present yourself on the network and how you perform your network self.

Identity and performance meet spam at a communication crossroad. Aliasing and forging fake identities are recurrent topics on Usenet, and a technoliteracy about the rules of network use. Masters flammers use sock-puppeting to troll around without being caught as singletons. But aliasing can be a collective performance as well. Net.personalities such as net.god KIBO, or net.legend B1FF, have started cults and doppelgangers mimicking their humorous styles and absurdist content. The recurrence of these *persona* on Usenet playing with the rules of communication develops a social and aesthetic side of spam that is sometimes encountered in contemporary junk email.

Pseudonymity, though, is the black holes of these persona plays, highly criticized as allowing flammers’ bogus content on Usenet, the first form of network pollution before spamming and scamming. In a low-bandwidth economy, unsolicited content does matter when network-time is money, and emails are considered as commodified objects (which cost is shared by senders and receivers) more than free speech. The ARMM affair symbolizes this clash between play and economy on Usenet. Sent in 1994 by Richard Depew, a canceler (one who enforces the rules of “zero junk” on Usenet), the ARMM bot, looking at removing junk from newsgroups, actually ends up in a loop cancelling its own cancels, and spreading the cancel news all around, triggering a huge uproar. According to Templeton, it’s the first mass-mailing called “spam”, in an ironic twist of fate.

Emerging from the language experiments of an intentional community, both willfull and reflexive in its vernacularity, proto-spam has unlimited cultural effects, it reflects recursively on human communication as producing junk for social and cultural purposes – the only limitation being its institutionalization as an object in a network economy.

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An Infinite Continuum of Spewage: Bayesian Filtering and the Reinvention of Spam.

```
// ... it is unreasonable to
// assume that any finite number of samples can appropriately
// represent an infinite continuum of spewage, so we can bound
// the certainty of any measure [sic] to be in the range:
//
// limit: [ 1/featurecount+2 , 1 - 1/featurecount+2].
-- crm_markovian.c, crm114-20070810-BlameTheSegfault.src
```

“Norbert Wiener said if you compete with slaves you become a slave, and there is something similarly degrading about competing with spammers.” The writer is Paul Graham, the prominent Lisp programmer; the quote is from his 2002 essay, “A Plan for Spam”, one of the most influential documents in the the anti-spam movement. (Graham 2002) Influential for three reasons: first, because it suggested a way to get to grips with spam, to turn it into an object; second, because it won, effectively destroying spam as it then existed, sidestepping its social complexities to attack it on a precise technical point; and finally, because it lost, the pure and elegant technical attack being based on a new set of design values and social assumptions, interstices into which spam moved, transforming itself in the process, and accidentally producing a literary experiment on the grandest scale in human history.

Formless

Spam in all its diverse modes – from email campaigns directed at people to bot-generated blogs to affect search engine results – bases its resiliency and strength on two sources, one deep and one shallow. The deep source of spam's vigor as a form is that spammers operate largely by taking existing "good things," technologically and socially, to unforeseen extremes, making it difficult to destroy their capacities without doing damage to much larger constituencies of users and institutions, as well as dearly held values embedded in the design of the Internet and the systems built on it. The shallow source is simply that spam is often very hard to clearly define, whether the goal is legal, political, technical or scientific. Like art or pornography, it has often been a matter of knowing it when you see it, and early projects to filter spam emails before they reached the inbox tried to generalize particular experience, using crude techniques like word blacklists and blocking groups of addresses, with very mixed results. Spammers could fake addresses, and cook up innocuous subject lines and new scams faster than some centrally maintained list could keep up; dull-edged blocking tools tended to result in far too many missed legitimate messages, breaking the open square of email up into small, Balkanized camps, stricken by constant conversational uncertainty (have I missed something important? Did the other receive my message?). Spammers as a group seemed similarly formless in their mores, beyond guilt and shame, their "crime" without adequate legal definition to deter them.

Quantified Language

Graham proposed applying a Bayesian filter to this problem, with a twofold goal: the filter would transform the words in email messages into probabilities of spam or not-spam, attacking the language of spam methods, the only area in which spammers could not hide their intentions. This filtering, done on an individual basis, would not stop all spam, just enough to dramatically raise the cost of a spammer's business, with far more messages needed to get a single response. "Spammers are businessmen," Graham averred, and whether criminal or legitimate would leave if the work stopped paying. The regularity of spam language became its weakness, as the Bayesian system, a very sophisticated method of inferring likelihood from past events, learned from every message marked "spam" and "not-spam." Spam was words like "madam" and "guarantee"; non-spam "although" and "evening." Wiener had worried that workers in competition with the automated production of machines would become no better than machines themselves, slaves; Graham meant to put spammers in the same position, competing with mechanical readers that would filter and discard their messages with relentless, inhuman attention, persistence, and acuity. The method worked well and was widely adopted. Combined with changing perceptions and increasingly effective police action, it effectively killed the 1990s culture of spam, with its limp pretense of respectability, and language from marketing and salesmanship, leaving the field to the smartest and most overt of the criminals.

Litspam

The weak points seized on by the remaining generation of spammers were several, of which the strangest was a direct attack on Bayesian filters with the automated production of seemingly meaningful language. The filters couldn't be too strict, for fear of discarding too many legitimate messages, and enough non-spam words could get the message through the filter to the inbox – but most words, very rarely used, had a spam/non-spam probability of 50/50 and would make no difference. There was source of language in use, however, ready-made for algorithmic processing and statistical analysis, letters of transit to get a spam message before a person's eyes: the text files of public domain literature. Thus historical archives, Sinclair Lewis, pirated e-books, epic poems, and a thousand forgotten authors were pressed into the service of getting credit card numbers, producing a ceaselessly refined corpus of messages that suggest the clumsily mechanized avatars of Burroughs and Brion Gysin, Tristan Tzara and Louis Zukofsky, spam's high modernism.

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Worlds of Infection**

In February 2010 an outbreak of media panic spread through the British tabloid press concerning a marketing campaign called DubitInsider. The DubitInsider website recruits 13-24 year olds who consider themselves to be “peer leader[s] with strong communication skills” to act as “Brand Ambassadors”. This requires the clandestine passing-on of product suggestions to peers via posting on message boards and social networks, emails and instant messenger conversations, organizing small events and parties. DubitInsider ignited the moral indignation of the tabloids not because of its covert nature, but since Brand Ambassadors were apparently paid to market “unhealthy” junk foods to minors.

Tapping into the social influence of the consumer is nothing new. Seeking out so-called influentials is the basis of seasoned word-of-mouth campaigns and persists in “word-of-mouth” variations. For example, In4merz.com exploits the anticipated contagiousness of relations established between friends “on and offline” to promote music acts. “In4merz is about matching our artists to your friends who may like them.” Young In4merz create posters, banners and videos about acts, Twitter about them, leave comments on Facebook etc. For each level of promotion, In4merz earn points that convert into CDs, DVDs, concert tickets and potential backstage access.

What interests us, as analysts of network dysfunctionality, is how the logic of these marketing strategies overlaps with the same anomalous abstract diagrams that distribute spam and viruses. In a different context, hiding unsolicited brand messages in social media and the potential for the bulk sending of veiled product promotions for financial reward could arguably be called spamming. Furthermore, designed as they are to spread Trojan-like suggestions through imitative social networks, whether or not the strategies actually become contagious, their aim is to go viral.

When removed from the context of the anomalous Nigerian cybercafe or computer virus writing scene, and played out in the marketplaces of food and pop culture, the emergent spam logic and virality of network capitalism becomes part of a broader indexical change concerning the way contagious communication networks, vulnerable bodies and unconscious behaviours

can be harnessed. The logic adopted becomes a normalized online marketing activity, not only performed by corporations, but embedded in social relations of individuals as part of the strategies of business enterprise and brand design. Spamming and virality are no longer anomalies then, but are fast becoming the standard, acceptable way of doing business in the digital world. If the peer-to-peer recommendations and thumbs-up-buttons of "word-of-mouth 2.0" characterize the current paradigm of social media, these campaigns are indicative of a more aggressive and targeted Web 3.0 marketing of suggestion already on the horizon. This is a Web 3.0 that appeals directly to a user's emotional landscape and desire for intimacy (Ludovico 2005), and exploits the ready made expediency of contagiousness networks that pass on suggestion.

Following a similar neo-monadological approach set out by Lazzarato (2004) we articulate the dynamics of spam, viruses, and other related "anomalies," as constituent parts of new infectious worlds "created" by the business enterprise. We focus on the specific creative capacities of dysfunctionality in the production of network environments, and how "learning" from the irregularities of normalized communication adds new flesh to this world. We discuss how new knowledge concerning the productive powers of the anomalous is filtered through what Thrift (2005) calls the cultural circuit of capitalism: "[...] a feedback loop which is intended to keep capitalism surfing along the edge of its own contradictions." This new knowledge, acquired from the accidental events of the network, is seized upon by the business enterprise, leading to new consumer modeling intended to make ready environments so that the capricious spreading of social influence can be all the more effectively triggered and responded to.

Zittrain (2009) argues that viruses, spam and worms are threats to the generative principle of the Internet. Similarly, we contend that such software-driven social actions are exploitative of the open principles of the Internet, but further acknowledge the extent to which these practices have enthused and inspired the business enterprise. As we see it, "bad" software is not necessarily "malicious." It becomes integral to an alternative generative logic of capture implicated in the production of new worlds of infection. We will discuss how these epidemiological worlds were mapped by computer scientists in the 1980s before they pervaded the burgeoning offshoots of the billion dollar network security industry. We further chart how they were modeled by network science as early as the 1960s and are currently being exported, via the circuitry of capitalism, to the business enterprise.

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P 40

Interactive Transmission

- Sarah Taylor (gb):
A New Colour Palette as Digitally Controlled Woven Light
- Steve Heimbecker (ca):
Wind Space Architecture, Transmission and Sonic Mass. The
Turbulence Sound Matrix and FLEX
- Wang Zheng, Qiansheng Li, Fei Jiang, Jiakang Ji, Jingming Liu (cn):
Pulsation of City. Interactive Flying Ball Installation

A New Colour Palette as Digitally Controlled Light

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Introduction

The paper discusses the development of a practice-based research project by the artist. The research set out to question the possibilities of enhanced colouration and lighting effects exploiting optical fibres in conjunction with laser and digital technology. It questioned the use of laser techniques to enhance light and the incorporation of new lighting mechanisms using digital mix (DMX) lighting systems to address the possibility of programmable colour as novel, time-based aesthetics.

Research Context

The work is in response to an interest in the use of and available of new materials and technologies that are challenging the face of science, art and engineering. Within the context of design at the technology interface, fashion and textiles are providing an exciting platform for innovation, as promoted by the recent Materials Knowledge Transfer Network showcase exhibition, 'Made in Future' featuring UK smart fashion and textiles. There is significant market awareness and interest in light-emitting and colour-change materials and this can be seen across a range of market sectors and in today's products and artefacts. The use of optical fibres within light-emitting textile products, has steadily gained a greater market importance over the last 15 years and their use and visual exploration the arts and lighting design continues to grow as the inherent properties of the fibre and its related technology offer many possibilities and much scope for creative exploitation. Lighting mechanisms include light-emitting diodes (LEDs) as well as conventional light projectors, which continue to be the preferred option although their use is limited to lighting standard fibre bundle sizes.

Summary of Research

Research concentrated on fabric testing using a variety of commercially twisted paper yarns with optical fibre to establish woven suitability and effective light-emission. Paper proved a suitable material to enhance the quality of light. Instead of diffusing light, paper actively intensified light. In order to create more decorative effects and enhanced light output laser cutting and laser etching techniques were examined. Etching was found to be the most successful method of generating light loss for visual effect, as shown in fig 1.

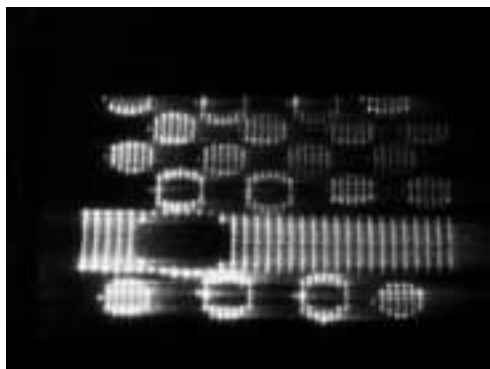


Fig. 1: Light-emission tests showing laser-etched optical fibre.



Fig. 2: Exhibit, 'Inner Light' (H 2.4m x W 1.2m): programmable woven paper, showcasing 'a new colour palette as digitally controlled light'

It was possible to create light loss in predetermined states along the length of the fibre before weaving. The correct intensity of etching was critical to allow sufficient light loss over a maximum length. Using this method, techniques were developed to produce a pre-designed, light-emitting paper yarn. Tri-colour LEDs were used to allow unusual colour mixing. Specific colour and lighting effects were designed using a digital mix (DMX) replay system in collaboration with lighting specialists at RMA Ltd. Housing the lighting mechanisms was greatly improved due to the small size of LED compared with conventional light projectors. Heat loss was also remarkably reduced. In collaboration with the UK electronic specialists, Circatron Ltd., new devices for coupling the fibre ends to the LED were developed. Colour intensity was significantly enhanced and proved effective within both a lit and a darkened environment. The combined use of the above achieved unusual and surprising colour mixes.

Research Conclusions

Research focused on exploring the inherent properties of optical fibres as both light guide and lighting mechanism. Utilizing expertise from the fields of electronics and lighting technology, the visual and technical capability of the fibre was maximized. The culmination of the research was an exhibit designed to promote new aesthetics and material concepts and mechanisms for generating enhanced colouration, as shown in fig 2. Knowledge of the individual technologies utilized in this research was widely known however, the amalgamation of these technologies to exploit and enhance new colour and effects, as light within woven structure was new. It is anticipated that these developments will have significance in terms of contemporary craft practice, design and industry, particularly within the field of textiles and lighting. The exhibit, 'Inner Light' promotes new concepts for programmable, light-emitting textiles of the future, which exploit the possibilities of designing with 'a new colour palette as digitally controlled light'.

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Wind Space Architecture, Transmission and Sonic Mass

The Turbulence Sound Matrix and FLEX

The Turbulence Sound Matrix (2008) uses wind data to diffuse and descretize sound. The TSM system consists of 8 speaker towers typically positioned in a circle around the audience, where each tower contains 8 vertical speaker positions for a total of 64 channels of discrete immersive audio. The TSM is the basis for the new, more compact, 8 X 8, 64 channel sound installation diffusion matrix "FLEX", a system scheduled for completion in Montréal in the winter of 2010/11.

The current design of the TSM and the Wind Space Architecture (WSA) "Plug and Play" Max patch software allows from 1 to 16 channels of external analogue sound to be directly input into the TSM 64 channel audio system to be discretized kinetically by cascading wind pattern data. The "PnP" software allows any external multi channel digital audio workstation (DAW), or "live" analogue mixing console, to be inserted quickly and efficiently into the TSM system hardware. Sound sources diffused can be mono, binaural, multichannel arrangements or mapping systems including Heimbecker's own Acoustic Mapping Process (1993). As importantly, the PnP design limits the processing burden of the TSM WSA primary CPU, which is engaged in the audio management of the 64 channel wind diffusion data, operating at 20 samples per second across the entire speaker array. The 128 ms latency of the system is fast enough to allow "live" mixing when using the WSA software in performances.

The WSA data does not alter the sound of the audio inserted, rather it alters the perception of the audio experience. We do not hear the wind, we hear what is touched by the wind. Cascading wind data acts like an omni directional carrier wave transmitting audio to the set of networked speaker outputs in the TSM/FLEX audio systems. The total cascading audio transmission is then manifest simultaneously through the synchronized wind wave patterns broadcasting a 64 point mass of fluctuating and naturally kinetic



Fig. 1: The Turbulence Sound Matrix, Elektra Festival Montreal, May 2008.

Photo: Camil Scorteanu, conception Lévy – Elektra – 2008

multi-channel sound from user prepared audio sources. Heimbecker has a library of nearly 100 hours of wind data, thanks to his Wind Array Cascade Machine (2003) capture system.

New WSA software for both TSM and FLEX is currently being developed where each inserted voice, up to 16 voices total, will be diffused with it's own 64 channel wind pattern. The new approach will create an audio mix of up to 16 layers of different 64 channel wind patterns. The source voices and the wind discretization of each voice are designed to be mixed using the auxiliary sends model of an audio mixing console, where the source audio can be mixed with the auxiliary effect from 1% to 100%. The user prepared audio sources inserted into the new WSA software are multiplied upward in a kind of multiplexing, where each independent channel of synchronized audio is expanded / discretized into 64 channels of wind synchronized kinetic audio, creating 2 fundamental layers movement and spatialization: the source arrangement, and the layers of audio wind data. In addition, the wind pattern data files can be edited (pattern, duration, direction / orientation) and looped. Also, in real time, the wind data files can be adjusted for articulation density, using parameters such as speed, and wave depth / amplitude (wind strength).

In September 2010, for both the TSM/FLEX systems, Heimbecker plans to research the integration of a high end 3D trajectory based hardware and software DAW that can be inserted directly into the software / hardware architecture of TSM/FLEX WSA. In this instance, 16 channels of vector based 3D audio arrangements will create primary temporal sound movements that access both the horizontal and vertical planes of the TSM/FLEX systems. In this 16 channel 3D format, each 8 channel speaker column of

the TSM/FLEX systems is subdivided into 2 groups of 4 speakers: creating an upper octaphonic group, and a lower octaphonic group within the speaker array. The new WSA matrix software will then diffuse the 16 voices of the 3D audio into 16 layers of 64 channel WSA diffusion and transmission.

Based upon Heimbecker's current studio practice and research with WSA, it is not expected that layering 16 wind patterns together will cause any phase distortions on original audio voices or the 3D constructs. The fluctuating wind data amplitude patterns tend to reduce or stop phase / nodes from occurring in the 360° immersion because the transmitted sonic mass from the speaker array is in constant high resolution temporal / spatial flux. The result is a system of audio creation and transmission capable of manifesting compositions that are kinetically rich, and as massive and omni present as the air itself compositions that consist of individual moving voices and fluctuating sonic masses, kinetically at ease together within the Wind Space Architecture of the TSM/FLEX systems.

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Pulsation of City

Interactive Flying Ball Installation

The idea of the work came from an exhibition which was held in Liverpool Biennale in 2009. The theme of the exhibition was related to the local canal in Liverpool. The Organization Committee hopes to select the art work which could be interactive with local people. So we thought about using electronic technology to show visual effects of the canal wave. In China we have a proverb 'The water that bears the boat is the same that swallows it'. We tried to use the work to explain the relationship between people and water. After comparing and testing materials repeatedly, we chose the acrylic tube, plastic ball, LED lights and industrial fans to make our work. The reasons we selected these materials were as follows:

1. We used to think about LED lights to simulate the wave. Finally, we believed that controlling the movements of real objects would be more thrilling and powerful than using lights.
2. There have been some works that can control the movements of real objects such as the metal balls controlled by metal strings which was made by ArtCom. Probably, it is the first time for an electronic art work to control ball by wind.
3. The original idea was to create an interactive mode between audience and the balls. When people walk close to the tube, the sensor under the tube would be triggered to send a signal to open the fan which was built in the bottom of the tube. So the ball will be blown to the specified location. After people pass the tubes, the motion of balls would be like waves shape.



Fig. 1: Sketch of the idea



Fig. 2: Finished work



Fig. 3: Sketch of updated idea

The work wasn't ready in time for the exhibition in Liverpool for some reasons. Fortunately, the idea was supported and accepted by Shanghai Shentong Metro Company. The work would be placed in the hall of the metro station. Considering one of the functions of the metro station hall is evacuation, we changed the idea and adjusted the target. Firstly, we canceled the interaction between passengers and balls to avoid congestion. Secondly, we make the motion of balls to follow the rhythm of music which is like a spectrum. The work was more than 13 meters long and 2.2 meters high. It created a flying ball display system which was formed by 68 transparent tubes. Each fan was controlled by computer independently. The whole work was installed on the wall of Houtan station of Metro Line 7, Shanghai. This station located in the main area of 2010 Shanghai Expo and opened in 20th April, 2010. The work attracted lots of passengers to stop and take photos.

We will upgrade the work in the next stage and try to make real balls to move in the 3-dimension space. Audience would feel the powerful visual impact of anti-gravity in real space. The motion of balls forms not only the shape of line but also the plains up and down.

The work was our first public art work with digital and electronic technology. It breaks through the traditional forms of public space art such as mural and sculpture, and builds a totally new visual art environment.

P 41

Smart Interfaces

- Ursula Damm, Matthias Weber, Sebastian Hundertmark (de):
Fernfuehler – An Art and Research Project about Ambient
Intelligent Furniture for Public Places
- Maria-Camilla Fiazza (it), András Szalai, Eszter Ozsvald, Krisztián Gergely (hu):
RoB-ArtS: Robotic Behavioral-Arts System. A Platform for Creative Exploration
of Agent Behavior
 - Nanda Khaorapapong (gb):
Making the Human Heart a Medium for Social Interaction
 - Mark Chavez (sg):
Cinematics and Narratives: Prototype1.2

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Fernfuehler – an Art and Research Project about Ambient Intelligent Furniture for Public Places

The observation of public spaces has been a topic in both science and in the arts. Science provides quantitative methods to describe pedestrian crowds and pedestrian interaction. With person tracking and intelligent algorithms it is possible to measure the behavior of people moving across a place. In comparison, few is known about the impact of architecture and the design of public spaces on the ambiance of a site.

Present systems only passively observe places and pedestrians on it without influencing the situation. What is about to happen if the space itself changes? Or, taking it one step further: What if the place itself observes passers-by and responds to the behavior of pedestrians to the point of influencing them?



Fig. 1: Fernfuehler simulation

This is the essence of the “Fernfühler” project. The project proposes the creation fluctuating spatial settings, to foster the understanding of the relation between urban design and peoples behavior therein.

In general, an observed place has to be furnished with sensors and intelligent elements that react on people. Such elements could be interactive illumination, moving barriers or exhibits that shift corresponding to the behavior of people. Moving obstacles should have a significant impact on peoples (spatial) behavior. Another category of objects that supposedly will be highly influential concerning the behavior of people is moving furniture. Therefore, such types of elements are worthwhile to be investigated or to be included in art work.

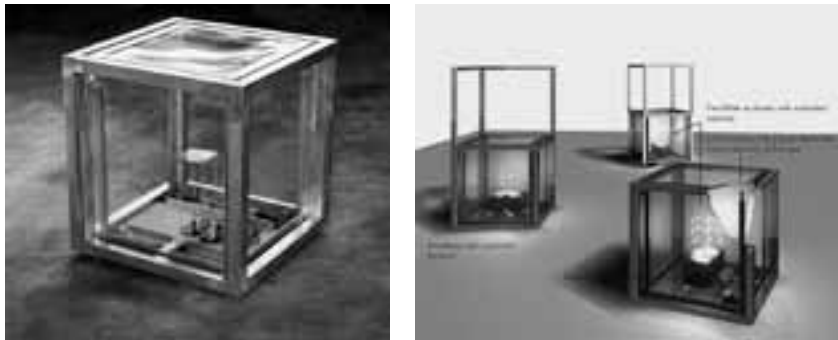


Fig. 2 + 3: First Prototype

Different technologies could be embodied in such intelligent elements. They should lack the ability to sense people, while influencing the outlook and the design of a place. Those elements should be able to learn about a place by observing the pedestrians circulating on it. Also they should be able to act on a place according to what they have learned. As a consequence, these elements could become operators of a kind of „learning machine“.

The setup is rendered even more interesting if a place is regarded as an intelligent life form. It could function as a neural network, like a brain, reacting on peoples behavior. The aforementioned intelligent elements would be the actors of such a neural network. That is what this project is aiming for: The place as a whole shall learn about pedestrian behavior and respond to it. For instance the installation “world lines”, a public art project for the Metro Station “Schadowstrasse” at Düsseldorf consists of interactive, illuminated paving stones arranged in an irregular pattern on the square above the metro station. The stones react on the movement of passers-by by emitting light. This data is collected and processed to a generative video, extrapolating the movements of the pedestrians into the future and constructing a new, virtual image.

“Fernfühler”, in their specific occurrence, are seating options for public places that can be moved around at will. Instead of making available seating in public spaces as permanently fixed architecture, mobile groups of

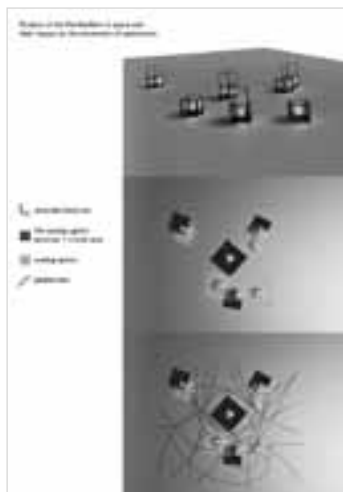


Fig. 4: Pedestrian

seats are provided which communicate with the visitors and with each other, thereby discovering, through experimentation, the optimal arrangement of elements in the space.

The “Fernfühlers” positioning relates to the behavior of passers-by, though the design of the “Fernfühlers” also defines the usage of the space. They are part of a neural network that encloses a whole place. This neural network can feel a place and it can change the place, by sensing people with each “Fernfühler” and by moving the “Fernfühler” according to the behavior of and the communication with the visitors. The “Fernfühlers” correspond to neurons of a neural network, the very basic element of such learning systems. If simply watching the automatically operating seats is perceived as boring, “Fernfühler” offers the possibility of interacting with the intelligent furniture by means of a smart phone. After the necessary software has been downloaded and installed via wireless a game-like interface offers the opportunity to activate and control the “Fernfühlers”.

The screen shows a network structure with dots at each node. Each “Fernfühler” in the area represents one of the nodes on this network. The network connects each “Fernfühler” while at the same time acting as a skin lying over the area.

The purpose of the installation is to make public space more attractive, especially for young people. By providing networked seating, they experience the area as a changing space, one that has moved beyond stable architecture. In addition people can take the role of a director, either on hand held computers or, if preferred, on a big screen, as they influence the behavior of passers-by through re-arranging the positions of the furniture. The experience resembles a computer game, though it takes immediate effect on the surrounding physical space, as well as on the passers-by.

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**RoB-ArtS: Robotic
Behavioral-Arts System**

**A Platform for Creative Exploration of Agent
Behavior**

A new form of illiteracy is emerging, which concerns the relationship between the individual and technology. Even though familiarity with new devices is continuously increasing, the majority of those that are not intimidated by technology are nevertheless passive users. It is critical in our age to strive towards a community of active and constructive users.

The discriminating factor is the ability to program a device: here, literacy is the writing of one's intentions in a form executable by a machine. The primary goal of project RoB-ArtS (Robotic Behavioral-Arts System) is bringing to the general public a gaming platform through which to develop programming literacy. In this respect, RoB-ArtS rightfully classifies as edutainment. Inherent in the process of learning the spirit of programming is a great deal of potential for raw creativity to be expressed. Live-coding is a way to bring programming to the speed at which natural thought processes occur – in real time. It is important to bypass tedious mechanical steps such as compiling the source code and repeatedly running the executable files, so as to leave proper room for intuition, skill and creative instinct.

Live-coding is technically a very challenging choice; in addition, players must be given sufficient expressivity to vehicle their creativity and not so much as to impair system functionality. Careful design of the set of available programming constructs is key. One way to answer this design challenge is accept a rather constrained initial expressivity and place the emphasis on

the interaction of threads, rather than on single programs. In this respect, our platform markedly differs from programming games that have already been developed.

Focusing on interaction of programmable agents opens the way to explore emergence of complex behaviors from elementary units. The player faces a world of rich patterns, unpredictable stimuli and sometimes beautifully effective constructions from modest building blocks. These features have been extensively studied in fields that originate from (or are related to) AI – such as complexity science, small-population social dynamics, game theory and cellular automata. Our platform can also be viewed as an agile and flexible tool for research in such fields.

RoB-ArtS brings into focus the notion of agent behavior. Players program virtual robots immersed in a vivid environment to accomplish specific missions. The problems are inherently open-ended, given what the player has available and the characteristics of the environment. A simple solution that works most of the time is preferable to very complex solutions that are conceptually more accurate. A key part of the game is the exploration of collaborative behavior – so that effective problem-solving can be perceived as emerging from interaction of partial solutions.

Instead of guiding the player through progressively longer and more sophisticated programs, our focus is on writing simple and short scripts on the fly. We believe that programming skill, depth and agility can be trained equally as effectively in a responsive and fast-changing environment. Reactivity in the world also encourages reactivity in the player, in the form of on-the-fly scripting. We hope in this way to discourage programming practices that take away from raw creativity and encourage, instead, sticking to simple ideas, tuned to match intervening circumstances. A skilled programmer can easily devise a script to encode complex behavior, but it is not common practice to try realizing goals through interaction of simple autonomous units.

Single-player mode emphasizes adaptability and interaction of simple autonomous units; the player is guided towards the notion of distributed computation and of swarm intelligence. In multi-player mode, players measure themselves against virtual agents whose behavior is a priori unknown, learn which attitudes towards other agents are more likely to be successful and explore relating to agents that are perceived as outside the boundaries of the self.

A parallel theme explored in RoB-ArtS is the interplay between consciousness and its embodiment. The game storyline is centered around an intelligence awakening within a robot – the only embodiment suitable to support it after a global catastrophe has left the world in lifeless ruins. As the game progresses, this intelligence is able to expand into further hardware – and thus doing it remembers itself, apparently evolving into something larger but in actuality simply reclaiming room for self-expression. This process is accompanied by new perspectives available to the player (first- and third-person view, split screens, inner/outer view) and by a larger set of noun/verbs to program with.

RoB-ArtS is an ongoing independent project. In addition to gaming, the platform comprises a set of interfaces meant to build on the feel for emerging behavior developed in the game; behavioral intuition can be turned into an opportunity for critical thinking on social interactions in the human community. Players can view themselves as embodied behaviors and draw inspiration from the strategies that have proven successful in the game. Reprogramming an under-performing robot is quite natural in the game; it can map into a positive stimulus to believe that personal change is possible.

**Nanda
Khaorapong** (gb)University of London, MFA
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nanda@nandadoes.com**Making the Human
Heart a Medium for
Social Interaction**

I see the human heart at the core of our physical, symbolic and emotive bodies – as a co-performative mechanism with the mind, bodies, technologies and our surroundings. This view had informed my art practice at a time when biofeedback technologies are becoming more domesticated and modifiable. Stetho-phone with pulse oximeter embedded in its handset is a biofeedback device created for Heart Lounge, a computer-mediated environment designed to construct the participant's perceptual experience of the heart (internal) in a way that the changes of the environment (external) mirror the internal changes. Auditory and visual displays are the result of repetitive behaviour of the heart which is generated by the software and represented through a light projector and loudspeaker. These representations are not meant to mimic medical reports, but to offer participants introspection in a shared space. The “undressing” of the biobody in public view makes the embodiment of the heart possible and constitutes a new environment where a computational system reconnects an internal system with the mind itself; the heart becomes an interface of “mindbody” (Katherine Hayles). It gives rise to an inside-out experience that extends this “mindbody” to an external world.

Human-machine relation

Back in 1954, McLuhan foresaw techno arts that could take everything as its material. Every time the heart pumps blood, it creates a pulse with oxygen saturation. If Biology is the new medium as Thacker (2003) says in his *What is Biomedica?*, the pulse's saturation, here, is the message flowing through mind, body, oximeter, other hardwares and software. Signals of one's heart are turned into information for making dialogue with technologies, environment and other participants, The point where the finger and the oximeter touch, is the actual point where the heart system is extended into the machine environment. This coupling of body and technologies make the participant's body become a basis for computational signals. The heart does not only maintain the living organism but also drives the flow of electrical current among electronic devices, controls software to perform and influences the fluidity of the displays. The change of displays is important to the responsive

quality of the work; it assists the participant's cognitive process in which the change of the external "world" is driven by her own heart. Biological and electronic signals interact; they create a complex environment, where the behaviours of artificial and natural agents merge.

A Medium for interactions

In his research on responsive environments with auditory and visual displays, Kruger (1977) suggests that response is a new medium for real-time interaction between men and machines where it consists of sensing, display and control systems. In Heart Lounge, how the heart becomes a channel connecting people depends on a participant's experience with its mechanical response. The machines receive input from a participant then present the output in ways she can recognize as corresponding to her behaviour. It is within this context that the heart acts as a processor controlling the responsive quality of environment in the lounge which consists of two dimensions – individual and communal. These depend on which dimension the individual responds to.

After the first instant of interaction, the computer displays the result; the participant chooses her next action and anticipates the next result. If the individual is only aware of her own heart ambience and the wall pattern right in front of herself, then her heart exists as a medium for introspective interaction. Yet, the displays created by the participant also become perceptual objects for other participants. The space is only 5.5 by 7 m; it is impossible for one to ignore the displays created by three others. Four tracks of heart ambience interweave at all times to make new acoustic heart mixes, as do the changes of four wall patterns altering the whole architectural design environment. The communal engagement occurs at this moment. One action triggers both individual and communal environments defined by perceptual experiences of participants.

Wiener's idea of cybernetics regarding the organisation of social systems, 'it is certainly true that the social system is an organisation like the individual, that is bound together by a system of communication, and that it has a dynamic in which circular processors of a feedback nature play an important role.' (Paine, 2006) The responsive environment of Heart Lounge provides a basis for the consideration of the human condition that represents a pattern of social interaction in a sense that the human heart is used to create repetitive and intimate loops between individuals and a set of machines. Interacting with the surroundings, every action individuals make does not only extend their body boundaries to reach the interpenetration of the technology, but the interiors of others, as well.

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**Cinematics
And Narratives:
Prototype1.2****The System Within The System**

It is interesting to admit that emotions play an important role in rational decision making and other sensible activities, though the emotional factor is easy to be naturally ignored by scientists when they model rational and cognitive human activities. Picard [1] uses the rationale to found the affective computing theory that aims to make computing more intelligent via embedding the factor of emotions. She also pointed out it is a huge challenge for a computer to recognize human's emotions without verbal communication, but after an extended period of observation with aid of sensors, the computer is able to recognize 80% accuracy of human emotions [2][3]. This result urges us to move further to explore the possibility of implementing the real-time system for recognizing and reacting instantly within the narrative frame and context.

Implementation, Integration And Prototype

The prototype aims to integrate art research and computing development to test out relevant methodologies, character archetypes as well as functionalities and technologies that will be employed in the final system. In the prototype, researchers set up a simple interactive line including a few circumstances that the system is able to receive audience feedback and trigger the change of both the characters' behaviors/movements and imagery styles. In lieu of a complex story, a single scenario is adopted and protagonists are situated in a closed environment [see Fig 1].

As for the part of character development, artists are strictly following the pipeline workflow that most animation studios adopt, where character is not only treated as a single sheet of intuitive drawing, but a crucial step of detailed settings with prescriptive reference, data and imagery, such as the numeric dimension of body parts and proportion, still poses (sitting, lying down, standing, etc), action poses and finally with environment. The inspiration of art research is basically from the theme of revenge movies that we



Fig. 1: Prototype Room With Protagonists

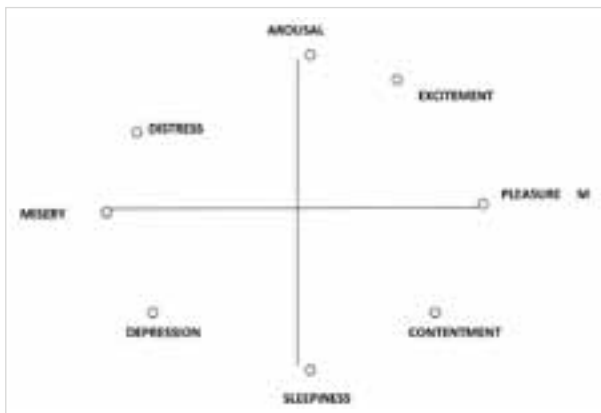


Fig. 2: A Circumplex Model Of Affect

show to participants in archetype study. So character primitives appeared in the system supposedly has a strong correlation with typical archetypes that are seen in commercial Hollywood titles.

Facial detection and recognition system plays an important role in the technical interface, which connects the input from audience and the output to main system that is about to retrieving the matched interpretation and further response of characters and narratives. In the initial state, we use the facial image sequences as the input which was downloaded from the website. Then the actively facial emotion pictures are employed as test pictures in the real system. Ekman and Friesen [4] developed the Facial Action Coding System (FACS) to code facial expressions where movements on the face are described by a set of action units (AUs). It is a common standard to systematically categorize the physical expression of emotions, and it has proven useful to psychologists and to animators. Mase [5] used optical flow

(OF) to recognize facial expressions. He was one of the first to use image processing techniques to recognize facial expressions. There are some other methods available such as geometric feature extraction, frequency domain feature extraction.

We try to rely upon the subspace methods to do the feature extraction. Later on, the dynamic feature extraction method optical flow will be used. Based on numerous researches [5][6][7] on emotion studies, as well as our foundation research described above, a six-emotion model is broadly adopted by scholars in relevant disciplines. However, when we apply it to the trigger mechanism, it is not enough to demonstrate another important factor, the degree of arousal, which is an essential indicator of narratives that directly reflects audience's participation and intensity of attention. Thus we introduce this circumplex [Fig 2] theorized by Russell [8] as the reference frame of emotions. As for the classifier, after comparing several models, such as SVM, Hidden Markov Models (HMM), Artificial Neural Network (ANN), K Nearest Neighbor (KNN), we decide to choose KNN as the classifier in our system.

At the same time, we utilize a developed graphics engine as the platform, Unreal Development Kit (UDK). We have five core requirements for the graphics engine that must support (1) high graphic quality; (2) level editor; (3) DLL bind which aims to integrate motion recognizer; (4) morph animation; and (5) last result as a standalone application. Unreal Development Kit or UDK is the Prototype system engine chosen by the production and programming teams according to the stated requirements.

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P 42

Grounded Virtuality

- Diane Gromala, Meehae Song, Steven J. Barnes (ca):
Inter(root), Banyan
- Andrew Wilson, Paul Coulton (gb):
Free All Monsters!
- Moritz Wehrmann, Jasmin Meerhoff (de):
“... so schallt es heraus”

Inter(root), Banyan

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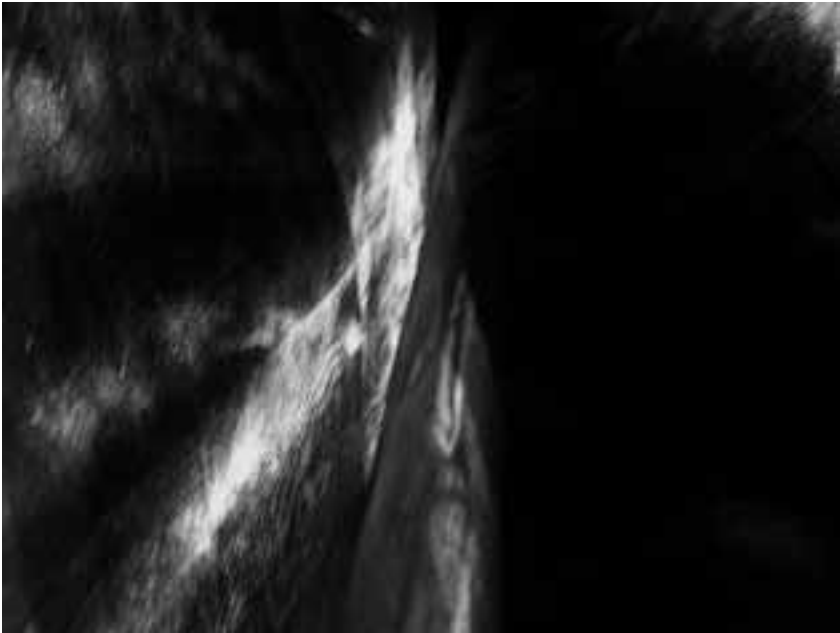
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While the branches seek sky and light, the hidden entangled roots consume.

What are the consequences of surfing the web for the next news headline, a nice pair of new shoes, or pornography? Can we spoil the real environment by exploring virtual ones like that in World of Warcraft? This exhibition will both directly address these sorts of questions about the environmental and ecological consequences of internet consumption, and also explore this relationship through an immersive, yet nontraditional mix of virtual and physical reality of the tangled tree of pleasure-seeking and environmental destruction that we have made for ourselves in the internet. This immersive exhibit will use a virtual representation of a Banyan tree to explore these issues.

The Banyan tree was chosen as metaphor because its unique structure and growth pattern simultaneously embody both the typical modernist idea of the tree and the more contemporary idea of the rhizome. That is, in a Banyan tree, it is hard to know which is the parent trunk, whether root is branch or vice versa, etc. Working as both tree and rhizome, the ancient Banyan is a metaphor for antediluvian and contemporary connectedness. Through exploration and habitation of a penetrable Banyan tree, interactors will experience the ecological and environmental costs of internet consumption; translucent roots reveal diverse energy sources that imply levels and types of consumption. In effect, the interactors are a consumed energy (source of pleasure) – traversing the tangled connected branches and roots – passing through xylem, phloem and pith. Octopus appendages to this boundless tree.



The exhibition will consist of a non-traditional virtual environment, where content is both projected on a screen that has both been woven in the form of a Banyan tree and is the physical form of that tree. When the interactors enter this virtual-physical exhibit, they become some quantum of worldwide energy consumption, as derived from our research-based equations; they are also witness to that consumption. As that unit of consumed energy, the interactor can traverse the tree to be consumed by it and witness its propagation. In short, our daily habit of web surfing and information engorgement will be visualized from the point of view of this Banyan tree's path of energy flow.

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Where Do Monsters Come From?

"No Gods, just Monsters!"

There haven't always been towns and cities, full of people hurrying to and fro to school or work. Where now stand shops, factories and offices were once streams, woods and hillsides. And every one of those places, even the loneliest tree standing by itself on the moors, had a monster to guard it. The place belonged to the monster, and the monster belonged to the place. So when towns and cities were built, the monsters had to stay, trapped under the tall buildings made of brick and stone and concrete. And there they remained, for 200 years. Until now.

Because the monsters have got very grumpy.

They are fed up of people walking on top of them, and they are really fed up of people squashing them under big, heavy cars. They want to live on the streets in the places that belong to them, the places where they used to live, a long time ago. Every time you play Free All Monsters!, whether you are using the Magical Monstervision Machine or setting free your own monsters for other people to find, you are helping to make a world that has monsters living in it again. And that is a much better place for people to live in as well!

Where Do Monsters Live?

Monsters live outside, in the streets, squares and parks of the places where you go every day or go to visit sometimes. The monsters live there all the



Fig. 1 + 2: Photo: Nick Harrison



Fig. 3: Vena the Monster drawn by Josy

time, in the cold and wind and rain as well as on warm sunny days. The places where monsters live are the places where everyone should be able to go, not just real places, but places in their imaginations as well, and the job of the monsters is to guard those places, and make sure they are always open, free and welcoming for anyone who wants to go there. Wherever you find a monster, it means that somebody cares about that place, and has set free a monster to live there and guard it.

How to Play Free All Monsters!

Free All Monsters! is a game for children, families and even grown ups. You'll use a Magical Monstervision Machine to look for invisible monsters living in the streets around you, then answer questions about the monsters to show your monster spotting skills, and set free your own monsters for other players to find. To play Free All Monsters! you'll need a Magical Monstervision Machine, a Monster Spotter's Guide for the place you want to look for monsters, and some felt tip pens and paper.

First of all, follow the picture clues on your Monster Spotter's Guide, and they will lead you to monsters that live in the streets around you. When you get close to a monster's lair, use the Magical Monstervision Machine to look for the monster. When you see the monster, look at it very carefully. On your Spotter's Guide you will find some questions about the monster, to test your monsterology skills. First you have to answer a question to show that you have watched the monster carefully, then you have to add scientific knowledge by coming up with a new theory to answer a question such as "Where does this monster go on holiday and what does it do there?"

Even though some monsters look very fierce and scary, they are really very old creatures who look after the places where they live, so they should never be captured or harmed, just watched. Every monster that you find was set free by somebody else, and when you have finished looking for those monsters you can set free some of your own. All you need to set free monsters is your imagination and some felt tip pens, paper and anything else you want to use to make a monster. When you have set free your monster it can be made part of the game for other people to find using the Magical Monstervision Machine.

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“... so schallt es heraus”

„Echo – ...so schallt es heraus.“

The title refers to an old German saying „Wie man in den Wald hinein ruft – so schallt es heraus.“ The translation would be “As you shout into the woods, so it will sound out,” or “As the question, so the answer.”

I am attempting to examine how the self is constructed, formed, and made visible in differing configurations of media technology. Nowadays we are accustomed to a very intimate relationship with several apparatus e.g. external memory, telecommunication, and locomotion. Although we are now so familiar with these techniques, we encountered a sublime feeling when a new technical futuristic horizon, like emailing, video conferencing, or mobile Internet access emerges. Do you remember the feeling when you sent or received a photo via email for the first time? Do you remember the time when you first walked through the woods, calling somebody with your mobile? In



Fig. 1: Exhibition: “Hört, Hört – Seht, Seht!”



Fig. 2: "Echo-spot" in Benneckenstein/Harz



Fig. 3: Back side

these moments we can see ourselves facing the distance, like the wanderer in a superior nature, in the romantic picture of the sublime. We are fascinated by the media landscape. After a short while the media itself becomes invisible, we see only the content and forget about the technique.

The visitor of the gallery (Fig.1) where „...so schallt es heraus“ is exhibited can regain this consciousness of the media and the in-between. At first sight s/he is not confronted with anything sublime: a tapestry work, showing meadow and woods in the German Harz region (Fig.2). The specific characteristic of the image hides behind. The pictured location actually exists and a very nice sounding echo. The image in the gallery is connected with this place via a bidirectional live audio stream. The gallery visitor's voice is streamed into the valley, sounding out of a loudspeaker. The echo rebounded by the woods is then rerecorded and transmitted back into the gallery, sounding out through speakers behind the image. The very simple act of a call, using this technology, becomes something more meaningful.

The old-fashioned tapestry image is a visual representation of the landscape in the Harz region. At the same time the pixel-like structure with the woven strings on the back (Fig.3) refers to the digital image. Apart from the visual representation of the "real" space and image space, the audio connection adds another layer to the referential network. The speaker on the meadow replaces the wanderer in the landscape. The echoing forest becomes an agent of the person shouting into the image in the gallery. Out of the simple bidirectional connection between two places evolves a complex network of relations.

Echo is the name of the legendary nymph Ovid describes in "Metamorphosis". She misleads people with their own voices, disorients Narcissus on his way through the forest. In the modern natural sciences the echo became a metaphor of localisation and orientation. The echo sounder measures time between sending and receiving of a signal. The visitor in the gallery is not able to localize himself by shouting in terms of Euclidian space. The signal one sends through the internet is influenced by variables such as the ping of the internet connection. The correlation of data flow is too complex to follow, but one can become aware of one's subjectivity facing the media landscape. The shouted "echo!" becomes the ping of self-awareness.

Keynote

Margaret Morse (us)

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Out of Sync

**What Artists Do Despite the Worn
Out Conceptual Frameworks We
Use to Think About Art**

The umbrella terms of electronic or new or digital “media art” or technological art no longer cover the range of art – gardening, textiles, bio art, social media – that is being made today in their name. We are using an exhausted framework provisionally until we find a way of understanding what we do that encourages rather than constrains us.

This presentation has two parts and a concluding question:

First, the presentations in the New Art Theory panels will be briefly reviewed and contextualized as various proposals to reframe or to expand our understanding of “what we do.”

Second, examples of specific pieces of art are presented that challenge our notions of what belongs to “media art”: the faucet (as a social medium contextualized by Grant Kester); the smell of dandelion (Clara Ursitti and ARTLINK) and the distribution of art and the senses; and, the chemical computer (Bill Seaman and a very different approach by Herwig Weiser), challenging the conceptual binaries such as analog/digital, hardware/software. Rather than an epigonal time (based on the past), we live in a period of epic struggle to maintain openness in areas of cultural innovation. The utopian impulses that originally informed and motivated media art have been taken seriously and evolved into a greater perceptual and symbolic range in recent art.

The presentation concludes by asking whether it makes sense to reframe the notion of “medium” and “art” so as to capture the complexity of current situation and find the common thread in our shared utopian heritage.

P 43

Latin American Forum III: Recent Histories of Electronic Culture in Latin America

■ **Andres Burbano (co):**
Asuar Digital Analog Computer

■ **Enrique Rivera, Catalina Ossa (cl):**
Absolutum Obsoletum. If It Works It's Out of Date

■ **Alejandro Duque (co):**
Maleficio. Rituals of the Illnatured

■ **Lila Pagola (ar):**
From Free Software to Criticism on the Authorship Notion in
Artistic Practices in Argentina

■ **Simone Osthoff (br/us):**
Women, Art, and Technology in Brazil

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Asuar Digital Analog Computer

COMDASUAR

In his book “La música electroacústica en Chile, 50 años” (The Electroacoustic Music in Chile – 50 years) Federico Schumacher dedicates one chapter to introduce, describe and analyze the Asuar Digital Analog Computer: COMDASUAR, a personal computer dedicated exclusively to musical purposes built from scratch by José Vicente Asuar in 1978 in Santiago de Chile. At the end of that chapter the author writes the following about the composer and engineer: “Hopefully these lines that we have written about everything done by him during more than thirty years of work in our electroacoustic music landscape, will pay a fair and perhaps forgotten tribute, to the person who has done more than anyone for electroacoustic music in Chile”.

José Vicente Asuar (1933) is a pioneer in his field; he was the first composer to build a studio for electronic music and sound processing in Chile in 1957. The construction of that laboratory gave him the opportunity to write his dissertation in order to get accreditation as Civil Engineer, and was also the origin of his activity as electroacoustic composer. His text “En el umbral de una nueva era para la música” (In the Threshold of a New Era for Music, 1959) is a foundational theoretical text considering the possible impact of new technologies in musical production. His composition “Variaciones Espectrales” (Spectral Variations, 1958) is considered by many as the first piece of electronic music played/performed in public in Chile, and probably the same is true for the whole of Latin America. Later on in his life, he won some prestigious composition prizes like the one in Bourges in 1975 for his work “Guararia Reparo” and the Dartmouth Arts Council Prize for his composition “Divertimento”. All along his career he was in contact with several important composers however Meyer-Eppler in Germany seems to be particularly important as well as Juan Amenábar in Chile.

His experience creating studios in Chile, Venezuela and Germany gave him mastery in the knowledge of sound studios and music labs. At the time he faced difficulties of starting the process of making a personal computer



Fig. 1: José Vicente Asuar composing with COMDASUAR, Santiago de Chile 1978.
Photo: Picture from the LP "Así habló el Computador" by José Vicente Asuar.

in a country in South America where no industry was ready to receive his technical research the critiques about his computer based compositions were in general quite positive. COMDASUAR was made with the idea of creating a tool to explore different possibilities of computer music, on the one hand there is a system to generate sound that was a mixture between a digital and analog process and on the other hand there is a system to create algorithmic musical pieces, called "heuristic software" in the words of Asuar himself.

There are many things that make his work unique, amongst other things there is the equilibrium between his role as technician, as composer and as writer; in every step of his career there are texts, albums and technical achievements that show the coherence and consistence of his production. By the time José Vicente Asuar built COMDASUAR he already had composed music using computers, for instance he worked at the beginning of the seventies with the PDP 8 computer.

COMDASUAR stands for "Computador Analógico Digital Asuar" that translates "Asuar Digital Analog Computer". This machine was conceived and assembled entirely by José Vicente Asuar, the CPU was an Intel 8080 processor, the sound was produced using 2 timers, each one with 3 voices, therefore COMDASUAR was polyphonic (6 voices). COMDASUAR's software was completely programmed in machine language; some of the software that Asuar coded and called "heuristic software" can be considered today as algorithmic composition software. Asuar produced one educative and artistic album using COMDASUAR, that album is entitled "Así habló el computador"

(Thus Spoke the Computer) he published a comprehensive report in 1980 about COMDASUAR in the journal "Revista Musical Chilena".

Conclusion

Often when we hear the expression computer music we think in composers that have used the computer – with different needs, approaches, methodologies and/or techniques – to process sound, to do compositions, to prepare the scores etc. However the group of those composers who also were able to build – totally or in part – their own computer machines to produce their work is very small, the fact that José Vicente Asuar made the "Computador Analógico Digital Asuar" COMDASUAR in 1978 in Chile and used it to create different kind of compositions constitutes a unique artistic and technical process in Latin America.

I also want to point out three unique characteristics about COMDASUAR: its experimental character, the fact that COMDASUAR can be seen as a compendium of creative and inexpensive technical solutions, and the fact that the need to build such a machine is exactly in between technical and artistic domains.

Acknowledgments

The interview that is the main source for this paper was possible thanks to the collaboration of Ignacio Nieto in Santiago, Chile.

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In 1970 at the beginning of Chilean socialist pacific revolution in the Allende's government, Fernando Flores, an engineer in charge of CORFO, the office which was in charge to manage the nationalized companies, knew the work of the cybernetician Stafford Beer on Management Cybernetics, and invite him to apply his VIABLE SYSTEM MODEL.

Beer accepted the invitation and the project started with the configuration of a transdisciplinary team and a branch of several Chilean and foreign institutions, like INTEC (Institute of Technology), ECOM (Computer Company of Chile), together with important theorists, scientists and designers such as Raul Espejo, Gui Bonsiepe, Humberto Maturana, Francisco Varela, among others. They developed the interface, software, technical implementation and the training of the people who will compile and transmit the data, a group compound by engineers and common workers.

This was a conceptual and technological revolutionary project that was applying a data transferring system based on the human nervous system and autopoiesis, in a country where for the management of its own data, used to send the information to BBAA in Argentina by plane, to get the information 2 months later. They were developing a system to have the data for correct decision making in one day. Very ahead of its time.

Cybersyn mainly consists of an interface of hardware and software built in Chile and England. It creates a network of telex machines connected to a computer that ran the Cyberstride Software, with the mission to connect the state administration with the newly nationalized companies like CODELCO, Chile's biggest cooper company. But the main characteristic of this project was to give TO THE PEOPLE THE TOOLS OF SCIENCE, participating in the decision making through the Cyberfolk project.

They were almost on the same level of the most advanced researches on real time networks in the world, and if the coup had not occurred, maybe

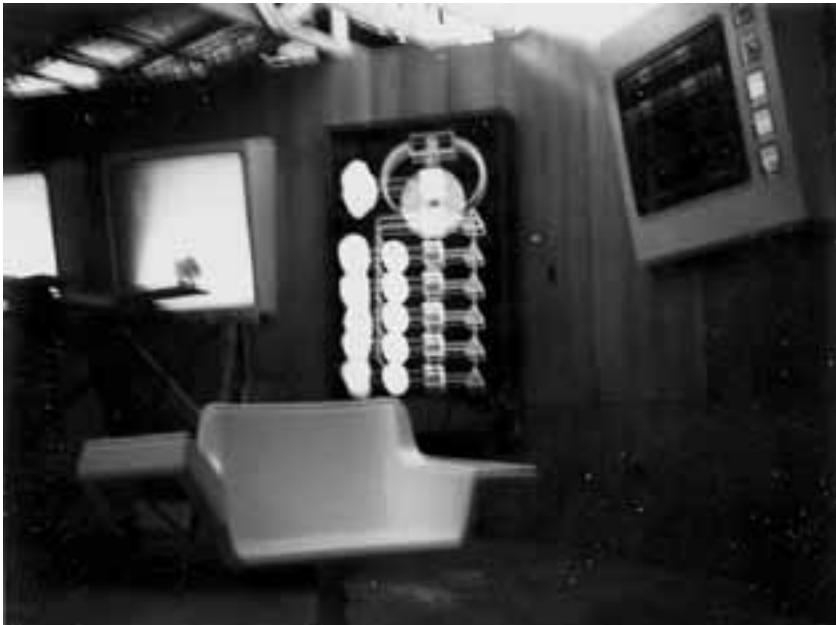


Fig. 1: Operation room on construction, 1972.
Stafford Beer collection, Liverpool John Mores University

this project could have been a great contribution for what we know today as creative commons, open knowledge, glocal, prosumers, social networks, immersive interactive spaces, decentralized economy and open democracy.

On the opening of the Cybersyn operation room, Salvador Allende and Stafford Beer prepared a speech which concluded with the next lines:

What you are about to hear today is revolutionary, not only because this is the first time that this is applied in the world, it is revolutionary because we are making a deliberate effort to give the people the power that science gives to us, enabling them to use it freely [1].

The operation room was supposed to move to the La Moneda Government Palace on September 1973, but this never happened, and the speech was never delivered. Describing this period, David Whittaker, a personal friend of Stafford Beer wrote [2]:

These were times of great uncertainty in Chile, as attempts to destabilise the government were rife. In Stafford's account of his final meeting with President Allende, on July 26th, he has this to say: "He asked me whether I had anything to ask him. I said yes; in view of the confusion being generated around the project, would he tell me quite directly the extent to which he expected worker control of the social economy. He replied: 'El máximo'. This had chimed perfectly with their first meeting, at La Moneda, two years

earlier. On that occasion the President wanted reassurance that the project was decentralising, worker-participative and anti-bureaucratic. Stafford was immensely impressed with his grasp of the model of the Viable System set out in *Brain of the Firm*, confirmed by his intelligent and probing questions. The model was being sketched out on a large sheet of paper on the table, and as Stafford worked his way up through Systems One, Two, Three and Four – he came to draw the final box number Five and label it ‘The President’, but he was pre-empted by the President himself who threw himself back in his chair saying: “At last, el pueblo.”



Fig. 2: Chair control panel detail, 1972. Stafford Beer collection, Liverpool John Mores University



Fig. 3: Multinode Metagame, ZKM 2008. Ossa & Rivera collection

This was the aim of the interactive installation *Multinode Metagame*, to bring the chance to the people to know this “archeology of Latin American media,” using variables proposed on the original project, but with modern technology. All these variables were created with the purpose of creating an atmosphere of immersion which would enable visitors to interact with the installation in an absolute unique and never to be repeated way. The different elements of the installation are laid out in such a way that they allow for what could best be defined as a kind of non-lineal narration or edition, where information or knowledge can be modified by the visitors. This is why we could describe this installation as a non lineal interactive documentary film, that is a kind of “aleph” that connects historical events and the new expansion possibilities of concepts and aesthetics proposed the Cybersyn project.

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- [1] Stafford Beer quote
- [2] Opening speech of the operation room, by Salvador Allende and Stafford Beer 3: Catalogue of the installation *Multinode Metagame* www.multinode-metagame.cl

Maleficio

Rituals of the Illnated

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Where is that missile supposed to be landing?

Being teased to deal in words with the notion of “Lo-Tech” and, to come close to the subject matter while engaging and defining such an overly oxygenated notion could be or mean within the kingdom of tropical maladies one should at the very least try first to map the place where targeted group strives to exist.

It would be relevant to address in parallel the very notion of *tecne*, (from ancient greek *Τέχνη* meaning craftsmanship, craft, or art) which is always the very essence of thought. A track that is way too foreign as the language I’m using here, while the main is to lineate a place where the idea of “low-tech” can be presented and studied in the context of a Colombian editorial project. One can easily guess that all imported (from Europe or the US) models fail miserably when trying to enact valuable practices or discourse on local South American communities. In the case of Colombia, a place that remains in the midst of sustained intellectual addiction to the “first” world, whatever comes from the outside is considered by default as better. All induced information flows get mixed up with a lack of identity, a leftover complex gift of the colonialist endeavors to erase all roots and history. Today we leave on such backlashes that is sadly driven and maintained by “Us” the locals. Colombians live currently an international seizure. Ostracized from a world that is a forbidden place, while at the same time they get bombarded without mercy, via mass mediated images, news-lines, lifestyles, and what not.

Only about 14 countries on the planet allow Colombians to freely enter their territory. Most of these neighboring countries.

Instead of looking out to what the “Other” is producing under the low-tech slogan, we should subvert the approach and put our attention to reconsider why and how are those (“made in Colombia”) minisubmarines being built?[1]

It’s not just a “criminal” act as the media will put it. Fearlessly, we should think about how their navigational and communications systems can be

improved, following drone designs to avoid putting the life of the desperate in risk. Or, a less life threatening task, how can we build simple helical antennas and beam signals onto geostationary satellites to create networks for people living in the most remote locations (this has been done and proved to work and in a cheap and easy way so would remove telecommunications companies and data transmission ISP's). Activity from Brazilian pirates is mostly on 255.550 MHz but one can also hear them on 266.66 – 262.2 AOR fltscom 8. Some Russian pirates are discovering this UHF realm and make test calls on 257,000 and 257,900 MHz via a IOR (Indian Ocean Region) satellite.

It will be then the so called "Other" and not "Us" who would follow this free will examples of insurrection. We are all here receiving a call on civil disobedience. [Fig. 1]



Fig. 1: A 4 elements yagi antenna for 260mhz UHF Military band



Fig. 2: Cocaine balls via X-rays – 10 to 15 condom made balls each containing 10grm of cocaine

From homegrown Coca-Cola recipes, USD, Euros or Australian (known to be one of the most secure systems) currency falsification, Black Cocaine, drug cartel messaging pigeons, radio techniques from 50 year old guerrilleros, GPS guided european border crossing (nothing to do with Heath Buntings project). This is only a short list of practices that some will classify as illegal, all bond by the kinship of the praxis tracing communities that are not the often quoted examples by Negri, Hardt, Klein, Moore, etc. to define their notion of multitude. There will be no more knowledge than this on the practices of the everyday life taking place in most of the places of the developed world.

People pushed by the need to survive acquire and develop a way of living fearless of death, such techniques could be mistakenly labelled as "low-tech", but I claim them far from such a classification cause they actually enact a will to power, a particular philosophy of living. [Fig. 2]

Many Southern people stand with such an attitude, pushed and driven by the basic needs to survive and operate. They conform communities, systems which perform as "life technologies" (like individually we do our breathing, walking or shitting), invisible technologies that we could also define as "high tech" appropriation. A 'dispositif' that has managed to force a detour on established social economical structures (from the upraise of the indigenous communities movements in South America to the Pirate Party in Swe-

den). If one can't acknowledge this, then there will be no point introducing overhyped notions of "low tech", it will be all reduced to designers marketing strategies for selling online and offline little gadgets on the hype of the "Green," "enviromantally aware" or the "radical artist" posing as counscious actor. It makes me see the MAKE magazine as todays version of what the Radio Shack catalog was for the American household but expanded to the global scale market.

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- [2] [are being built]: http://www.nytimes.com/2009/04/26/magazine/26drugs-t.html?_r=2&pagewanted=all
- [3] [other stories on mini-submarines]: <http://scrying.org/doku.php?id=pm:alejoduque>

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From Free Software to Criticism on the Authorship Notion in Artistic Practices in Argentina

What responses are evoked by the free software model when it enters the scene of contemporary art in Argentina and some other countries of Latin America? The model of production, circulation and “participative” reception promoted and put into practice by the free software movement, has evoked manifold responses among artists – with potential and actual consequences – since they are both creators of “programs” and users of digital tools. These responses take place in a wide socio-cultural context including artistic practices within the art institution, but also those happening in the sphere of daily communication and global exchanges in which local actors take part, thus generating multiple echoes and feedback between the interacting fields.

Some shared key questions revolve around the artistic status of the digital tools and their resulting productions, or the nature of the creative process when digital technologies are involved – considering they were originally intended to serve other purposes; the knowledge and control of the new materials and procedures that artists need in order to use them; the potential of the new media for innovation and departure from tradition, and so on.

For artists, such questions are not new, from the invention of photography in 1839 onward, but they were given diverse and vague answers within the art institution during the 20th century, in contrast to the intense experimentation carried out by the artists in that field. All this has been taking place within countries which are not originators, but only recipients of technologies and, in a sense, also of artistic “trends.”

Free software and art: local connections

Apparently, there are two main ways through which digital artists directly connect themselves with free software: on the one hand, by considering free software as a new set of tools for experimentation, with a great potential for artistic use regarding to some capability for creating new and original functions. A new material to be mastered, a container which is no longer opaque, but open and transparent for those who have the required knowledge and skills for “subverting the interior of the black box”.

The open source code of free software used in art, is a strategy that enhances the display of what the artist now conceives as the work of art itself: the code. In many of these cases, more than an option and explicit stance, the use of free software is merely instrumental.

A particular variation of this group is one that “opens the code” of productions done with privative software of common access in Latin America.

Another way of connection, different and later in time, is embodied in those artists who envision the social takeover of information technologies, especially the Internet, as utopian promises of new ways of social organization and power distribution, also known as “first epoch” of artistic practices on the net. The second epoch would be represented by artists having access or migrating to the use of environments web 2.0.

In this case, the approach to free software is politically propelled, as a way of radicalization of ideas and actions which approximate these artistic practices to the deployment of the critical potential of the technical form itself. Thus artists problematize the celebratory acceptance of art-technology convergence from within the art institution, looking for new ways of overcoming the communication gap between artists and public perceived in contemporary artistic practices, or pointing out the colonization of people's subjectivity by the market prevailing on the scene of the web 2.0.

Proto-copyleft culture and performative effects

Free software as a way of making culture points out a model practised with overwhelming frequency by contemporary artists. This model includes practices such as quotation, appropriation, remix, post-production, etc., as contemporary artistic strategies present in works of art.

In many cases, these ways of production are not explicit, or not executed as a “program” that can be extended to all persons, all media. Even more, usually these creative strategies are proposed as valid only inside the art institution, and for roles assigned within it, without projecting their transforming potential outside, and regarded as publicly acceptable “exceptions”, only as far as they remain politically deactivated. This fact comes into contradiction with a rarified context in which almost every cultural production can beget as an unauthorized copy.

In this sense, maybe the most powerful discussion around this topic is generated by the practice and discourse of the so-called “copyleft attitude” that we can find among contemporary artists. Its main effect is a performative one: an exercise in self-consciousness about one's own ways of mak-

ing, distributing and winning over others for participating in the dynamics of culture, recognized as a “round trip” with different degrees of implication, interest, competencies, wishes among the actors involved.

From a background we have called “proto-copyleft”, to the concrete interactions of the free software community with artists, this analysis intends to point out some interpretative keys regarding the particular way of being which, in the Argentinian and Latin American context of artistic practices, we can link with the model created and spread by free software and culture.

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Women, Art, and Technology in Brazil

This paper surveys both pioneer accomplishments and contemporary works by Brazilian women media artists since the early 1960s. Their works range from electro-acoustic music to neon light, holography, cinema, experimental film, video, photography, kinetic and multimedia performances and installations, virtual worlds, and Web-based cultural activism. Beginning with a discussion of the controversial issue of gender in Brazil, the essay weaves



Fig. 1: Jocy de Oliveira in 1964 performing *Winter Music* by John Cage on a showboat on the Mississippi river. Photo: James Rackwitz, courtesy of the artist.



Fig. 2: Anna Bella Geiger 1974 video *Passagens [Passages]* is a twelve-minute series of stairways in loop that the artist ascends indefinitely. Photo: courtesy of the artist.

social, aesthetic, and epistemological concerns. As a general rule, these artists did not explore women's issues as a project nor were they interested in feminist questions per se. Nevertheless, women artists contributed to the advancement of media arts with both personal and critical perspectives. This overview, despite the inclusion of a large number of artists (more than forty), is by no means a complete survey, but rather an early assessment, which will hopefully instigate new research.

The paper is divided into eight parts, which are organized chronologically and as much as possible according to media. The introduction gives an overview of feminism in twentieth-century Brazilian art. Part one examines three pioneers from the 1960s: Jocy de Oliveira [Fig. 1], Sulamita Mairenes, and Tereza Simões. They are early visionaries still waiting to receive further critical evaluation and historical recognition. Part two focuses on Cinema and the role of women directors throughout the twentieth century. This section is based on an earlier assessment from 1982, followed by a consideration of the increasing number of women directors since then. Part three analyses the area known as "Almost Cinema"—the moving image in the visual arts, in which women were always prominent. It includes among other pioneers from the early 1970s, Lygia Pape, Anna Bella Geiger [Fig. 2], Iole de Freitas, Letícia Parente and Regina Silveira. Part four examines the work of Sandra Kogut focusing on her award winning 1991 video "Parabolic People" [Fig. 3]. Part five probes Rosângela Rennó's "Universal Archives" along with issues of appropriation, memory and history in photographic installations. Part



Fig. 3: Sandra Kogut 1991 video Parabolic People is a forty-minute collage of footage taken in the streets of Dakar, Moscow, New York, Tokyo, Paris, and Rio de Janeiro. Photo: courtesy of the artist.

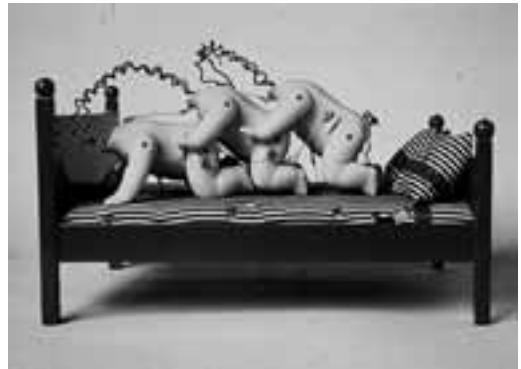


Fig. 4: Marcia X 1995 installation Os Kaminhas Sutrinhas [meaning in Portuguese “the little Kama Sutrás”] includes twenty-eight doll beds (each 17 x 30 x 22 cm) and as many as sixty battery-operated crawling baby dolls connected by wiring and coupled according to positions of the Kama Sutra. Photo: Vicente de Mello, courtesy of the artist.

six focuses on the sexually charged low-tech-high-impact gadgets of the performance/installation artist Marcia X whose career ended prematurely [Fig. 4]. Part seven concentrates upon the multimedia performances and installations of Artemis Moroni, Simone Michelin, Bia Medeiros and Diana Domingues. Part eight looks at computer generated worlds and the use of the Internet as site and medium. It includes the works of Tania Fraga, Rejane Spitz, Suzete Venturelli, Giselle Beiguelman, and Patricia Canetti.

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P 44

New Art Theory I

- Lucas Evers, Susanne Jaschko (de):
Process as Paradigm
- Tegan Bristow (za):
Methods of Evocation: The Evocation of the Sublime
in Digital Art
- Liesbeth Huybrechts (be):
The Role of Risky Objects in an Internet of Things

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Process as Paradigm

The exhibition *Process as Paradigm* poses a bold thesis: process – non-linear and non-deterministic – has become one of the major paradigms in contemporary art and culture.

Here we mean process based art in contrast to the process art of the sixties and seventies that was all about performance, the here and now, the ritual, the artist conducting the process, whereas we use the term in a different way: process as a property or behavior of a system, be it nature, society, culture or art.

This paradigm reflects the fact we have ever better means, concepts and technology to observe reality. As a result we have both a deeper understanding but simultaneously realise reality is far more difficult to master. Reality is an all-entangling process that holds many uncertainties – of which we are part.

Not discarding the past in which the Enlightenment has learned that nature holds many laws, *Process as Paradigm* explores the wide field between certainty and unpredictability. We curators look at systems constructed by artists and then released into the world; processes taking over their own development, experimental situations running in the relatively stable environment of an exhibition.

An exhibition, however, is a very discrete format of presenting artworks, even more when wanting to present processes as artworks in times where communication technology has learned us much about new forms of networked collaboration and human agency in processes and processual art.

Instead of just giving an overview about the exhibition and discussing how the works represent responses/answers to the questions we posed as curators, we would rather use the presentation at ISEA to discuss works that were difficult to present in an exhibition, but that take our concept further.

Those are works with a strong human/social aspect, with a strong aspect of (live) collaboration and of processual nature. Simultaneously questioning the exhibition as a format, those works in their nature alter contemporary

methods of artistic production. Art works that are composed of a multiple authorship through the involvement of multiple collaborators and participants; works that dissolve the barrier between the artwork and the public by the processual nature of the action of that same public (don't agency and processual contradict if agency is regarded a conscious strength?).

Human agency can be regarded as an ingredient for processual art production, but can its effect also be that the process becomes a *phantom captain* of human action as Andrea Grover concluded after Buckminster Fuller in her 2006 exhibition *Phantom Captain – Art and Crowdsourcing* [1] (a show that experienced similar difficulties representing its art in an exhibition)?

In how far do these properties lean on processuality, what does this mean for contemporary art production and what does it tell us about how we act as humans within "First Nature" (nature as we used to know it before technological singularity) and "Second Nature" (the highly sophisticated amalgam of automated processes our civilisation relies on) [2]?

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Methods of Evocation: The Evocation of the Sublime in Digital Art

There is something inexplicable about nature's vastness – it evokes 'something' – a feeling connecting us to a greater whole – wonderful yet simultaneously frightening. The Romantics called it the sublime.

In the European Romantic arts the notion of the sublime was resurrected from its Neo-Classical lineage. A resurrection that contributes to our contemporary understanding of the notion; felt and experienced within the observer, rather than its earlier use describing grandness or terror as an attribute of natural phenomena. In a direct response to the thrust of growing Empiricism and its increasing impact on how people understood the world, the Romantics saw it necessary to evoke the sublime through representation; an attempt to retain mysticism associated with nature. This was done with aesthetic theory based on how the sublime is evoked through the natural.

It was Immanuel Kant the 18th century German 'Idealist' philosopher who in attempting to explain 'responses to the world' identified the sublime as an emotion evoked within. The sublime he saw as evoked when reason and the imagination failed to fully comprehend a phenomenon. He identified two types of sublime. The *mathematical sublime*; based on the advance of apprehension, which presents no difficulty, like maths it continues infinitely; but the difficulty lies in comprehension. Kant explains a "bewilderment or perplexity":

[On entering St Peter in Rome] ... a feeling comes home to him of the inadequacy of his imagination for presenting the idea of a whole within which that imagination attains its maximum, and, in its fruitless efforts to extend this limit, recoils upon itself, but in so doing succumbs to an emotional delight. (75)

The sublime is entirely aesthetic.

The *dynamic sublime* is associated with fear, and delight in the avoidance of fatality. For its evocation one cannot be directly under threat, as it relies heavily on imagined threat. Imagined fear contributes to the sensation of joy, which is derived from not feeling fear itself. To feel fear, of a powerful river, Kant says, allows us to measure ourselves against that power and in our consciousness raise a sense of power in relation to it, this fear is measured and respect is placed on the object. (78)

In the Modern age, the evocation of the sublime becomes apparent in the face of early technology. David Nye speaks extensively of this in *The American Technological Sublime*. Nye deduces that Victorian architecture and machines were held in the same awe-inspiring light. An influence, he indicates of an attempt by the Victorian 'state' (and later North America) at heightening its idea in the eyes of everyday man. Drawing directly, but in opposition to its ideals, from principles of Romantic aesthetic theory.

In the 21st century technologies that inspire awe in one generation soon stop being remarkable for the next, who expect technology to be increasingly complex. Nye states that by implication this "undermines all notions of limitations, instead presupposing the ability to innovate continually." (179) The shackling of the sublime to technology is based on the conflict between what is known and what cannot be reasonably conceived; dividing those who know and those who do not. I believe that it is rooted in an attempt to retain a sense of otherness in technology; an attempted transcendence of reason itself, through technological progress.

J. F. Lyotard in *The Postmodern Condition* describes Modern Art as evoking the sublime in a new way as it presents the unknown without representing it. Evoking the indescribable in its use of primitivism and symbolism. Modern Art however gives the viewer "solace of form", which Lyotard believes is not the 'true' sublime sentiment. The ability to evoke the sublime without "solace of form" he believes is a truly Postmodern and therefore a disruptive form that can bring about a change.

Walter de Maria's *Lightning Field* (1977), considered Postmodern (Rosalind Krauss) is a case in point. Lighting rods on a high altitude field in New Mexico, placed apart in delineations of kilometers and miles; yet the work is only truly complete when there is lightning. It alludes to a gap between formal abstraction and an unpredictable natural phenomenon, evoking the sublime in that 'gap' without the need for negative presentation.

Digital art evokes the sublime in a similar way. I use Ben Rubin and Mark Hanson's *Listening Post* (2001-2003) to show this. The effect of *Listening Post* is that of an overwhelming sense of the magnitude of data 'moving through' the installation. Like *Lightning Field* it creates a location or abstract framework for the unrepresentable. The snippets of text seen and heard are fleeting and do not amount to a singular understanding of the content or form of the data. The sublime is evoked where the extent of the data cannot be reasoned.

Yet there is an extension in the digital, particularly in this case where data is an epiphenomenon. Michael Ostrowski's 'The Anxiety of the Client' (2005)

speaks of the 'client'; the computer/installation also known as the art object. On the clients role in *Listening Post* Ostrowski states:

The paradox of the client as subject becomes our own as we participate and co-conspire in the artwork. Data lurks behind not only the physical phenomena of the world, but behind our interiority, as the very possibility of the subject dissolves into the inaccessible world of data. (10)

In conclusion, the 'anxiety of the client' indicates that technology can no-longer in-itself evoke the sublime. When read further Lyotard's Postmodern theory relies on instabilities; the sublime and its return, for him is a model that questions Modernism. Ostrowski's 'anxiety of the client' is a reflexive model; showing technology as destabilised and reduced to a vessel.

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The Role of Risky Objects in an Internet of Things

A growing amount of designers wants to create mediating objects that contribute to a participatory relation between people and space, like RFID toolkits, mobile augmented reality applications, often referred to as locative media or Internet of Things (IOT) applications. Raessens states that

Negotiated, oppositional, and deconstructive readings (more so than dominant ones), configuration and selection (more so than exploration), and construction (more so than reconfiguration) are all, in their own specific way, part of what I call participatory media culture. (Raessens, 2005)

Literature and expert interviews in the framework of my Phd research in the field of Cultural Studies suggest that risky objects offer a good framework for designers of IOT applications, since they trigger a kind of sociality which fits well in the definition of participatory culture.

Latour states that the Space Shuttle Columbia was a risky object on the moment of the disaster on February 1, 2003. It talked for itself, about the technical and organisational problems that led to the disaster, when it transformed from something complicated, automatic and autonomous into a more transparent rain of debris. The shuttle seemed silent and autonomous in a 'normal' situation, but became critical and a full-blown mediator in this context, putting a social situation under pressure, while stimulating alternative conversations about it (Latour, 2005).

Risky objects are mediated (risk) practices, mediating beginnings and ends of societal dynamics with

1) a huge potential for creative action (principle of agency by anticipation of risks), 2) [...] good and bad effects (principle of undecidability) and 3) [...] a highly demanding situation where communication, and with it the production and consumption of knowledge, is entrenched by non-knowledge, ignorance and unawareness (principle of uncertainty). Communication may also fail due to the 'tyranny of contingency' of things, which as self-made, risky objects may always refer to something else (principle of contingency). (Schillmeier, 2008)



Fig. 1: Dataminded (2008) Photo: by Toon Gorissen & Niek Kosten (Andries Vanvinckenroye, Anneleen Lantmeeters, Ellen Haemers, Kelly-Marie Ceglowski, Liesbet D'Hondt)

Risky objects only appear in re-collections, re-assemblies of objects, which opens them for alternative conversations, inviting participation by very diverse and unexpected groups of people. They are innovative mediators when their in-between, unfinished character and the tensions they cause between people and space are used in a constructive way, according to authors like Gaver (ambiguous design, 2003), Sengers (reflective design, 2005) and Brandes and Erhoff (non intentional design, 2009).

Risky objects can be created via fiction, which can

bring – through the use of counterfactual history, 'thought' experiments and 'scientifiction' – the solid objects of today into the fluid states where their connections with humans may make sense. Here again sociologists have a lot to learn from artists (Latour, 2005)

In the research project Hybrid City our institute (www.socialspaces.be) worked with the community in Genk to disclose the mining heritage of – what is called – the C-Mine site. Students designed a fictional augmented reality application that projected digital anecdotes and data over the physical space in the form of blurred and distorted video, sound and graphical material. The application explored the uncertain relation between the personal experiences of people and physical space, brought the physical site in a fluid state and offered an alternative to smooth looking heritage tours, using

a PDA. Commercial design appears to struggle with the unfinished, in-between aesthetics of risk, despite of its innovative potential. One of the cases in my Phd research, Touchatag, is an IOT application that enables people to create personal networks in their daily spaces between people and things. While the object (Touchatag) was conceptualised in a highly risky way, it appeared to be a challenge to guard the risk in the object in the process of launching it on the market.

We tried to offer a first glimpse on the possibilities of risk for good mediating objects in an IOT. Risky objects initiate a relation of tension between people and a current space and stimulate people to act, to create, change and recover particular encounters within this space in development. They offer an interesting perspective for participation in an IOT that is, however, not entirely acknowledged in the commercial design field.

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P 45

Latin American Forum IV: Current Media Art Practice/ Artist Presentations

■ Ivan Puig (mx):
[ivanpuig/art/technology/production/context/mexico](#)

■ Rejane Cantoni (br):
Intelligent Environments: Research and Experiments in
Interactive Cinema

■ Brian Mackern (uy):
Netart Latino 'Database'/ Interface-Map

■ Lucas Bambozzi (br):
On Mobile Crash

■ Arcangel Constantini (mx):
Water-Art-Technology

The “Current Media Art Practice / Artist Presentations” panel contains a collection of current and fresh media art projects presented by the authors themselves.

ivanpuig/art/ technology/ production/ context/mexico

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In Mexico we usually have access to second generation or older devices, and therefore it is a collective effort to keep them working as long as possible. We are great importers and consumers of counterfeit and piracy products, creating a breeding ground for hacking and recycling.

The production of art involving technologies reflects this particular context. There is a recurrent critical stance in the use of devices that in many occasions are transformed or employed in ways that subvert its original purpose. The social, political and economical circumstance of the country frequently derives in projects with social contents and a highly critical discourse. There are important efforts in Mexico, including institutions that specifically support the production of art and technology, grant programs and festivals. And many other entities either official or particular that without being their specialty, recursively insert in their programs such demonstrations.



Fig. 1: Opinion leader/video stills/fictionalized news



Fig. 2: SEFT-1/3D render/probe in exploration



Fig. 3: SEFT-1/website/www.seft1.net

Opinion Leader is a piece I produced commissioned by the Arte Alameda Laboratory (LAA) for the SINERGIA exhibition, under the curatorship of Karla Jasso in September 2008. That show was the result of a seminar whose central theme was the reform of the Energy Law; during those months the future of Mexican oil was discussed not only on the legislative level but also from the perspective of public opinion. The country was immersed in a media war in which the only thing clear was the struggle of special interests. The piece resulted on a study of the mass media, specifically televised news and its role in the creation of public opinion. It is an investigation of the employment of image as a tool for validating discourse. See: www.ivanpuig.net/lider.html [Fig. 1]

In a growing interest, some spaces traditionally devoted to modern and contemporary art are commissioning and displaying works of electronic and media art. Such is the case of the National Museum, MUNAL, which is now

co-producing with the Multimedia Center (CMM) among others, the project in which we are currently working, SEFT-1 (Manned Railway Exploration Probe), that is part of a curatorial project by José Luis Barrios and Daniel Garza-Usabiaga.

It is a trans-disciplinary project of art, for public diffusion, which proposes the exploration of railways in disuse as a point of departure for reflection and investigation; their historical relevance, their social implications, their current circumstances and contexts. It deals with spatial relations, knowledge, movement, experience, the memory and the roads in relation to tools and their obsolescence, two poles of the social experience of technology: utility and disuse. And the way that ideology of progress marks its historical time. It explores stretches of abandoned railways by means of a vehicle that can carry a crew of two Rail-nauts. The results of the SEFT-1 encounters will be constantly uploaded to the project's webpage, www.seft.net. Through its site, the public will be able to follow the exploration, monitor the state of the probe, its location. Routes will be traced on maps layering three important moments in the country history: early 19th century, early 20th century, and actuality. Along the journeys, materials gathered by the probe will be shared with people in passing-by settlements, so the experience works both ways and the probe becomes a story carrier. [Fig. 2] [Fig. 3]

I believe that art can participate in social transformation, with a real political power, and the use of technologies in the context of developing countries such as our, has a great discursive strength to generate critical thinking.

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Intelligent Environments:

Research and Experiments in
Interactive Cinema

There is consensus among the cyber-researchers in saying that digital technologies will introduce changes that range from the installment of new models of representation and the organization of knowledge to our own transformation or cognitive expansion.

An interesting example of how is the argument elaborated by Alan Kay. In the text "The computer revolution hasn't happened yet", Kay formulates a series of questions about the introduction of the written printing press interfaces which, we all agree, had considerably transformed our oral society. Kay's questions are:

When did the written printing press revolution really take place?

Was it in the middle of the 15th century when Gutenberg produced his Bible of 42 lines and demonstrated 20 copies – that looked like a hand-written book – at the book fair in Nuremberg?

Or was it in the 16th century, when Martin Luther and William Tyndale translated the Bible into English and German, beginning the Reformation? (For those of you who don't remember Tyndale was strangled and then burned for this effort).

Or was it during the 17th century, when new styles of argumentation and ways of thinking began to be written and read? [1]

These questions are difficult to answer, but Kay prefers the 17th century hypothesis. According to him, new ways of thinking about the world were not introduced by the press technology through propagation of the Bible or what Aristotle might have said in the past. For Kay, this technology really had an impact because the users could, beginning then, elaborate hypotheses and inferences that could only have been constructed by means of a specific chain of thought, which could not be followed orally, but, rather, needed to be written and reproduced in order to be transmitted and studied. In other words and summarizing, what Kay's exotic proposal suggests is that the

invention of a new technology does not coincide with the innovations it produces. The author argues: The printing press was produced 200 years before society viewed literacy as a value.

The same seems to happen with computers and cinema.

The idea of a human centered cinematic interface, that consider the perceptive and cognitive capabilities of the interactor, stimulates me to investigate and develop experiments in interactive cinema. INFINITE CUBED, FLOOR, MIRROR and SOLAR, conceived and developed with Leonardo Crescenti, are some of the scientific and artistic products executed. As a rule of thumb, these experiments manipulate aspects of cinematic code via a device oriented approach. In these prototypes the emphasis lies in the custom design of cinematic interfaces that make it possible to stimulate multi-sensorial mechanisms of interaction and agencying screen/environment/subject.

INFINITE CUBED Imagine a 3 x 3 x 3 mirrored cube suspended 25 cm from the floor supported on a crosspiece in the center of a base having four springs, one on each corner. Two of its facets rotate on its central axle. One facet pivots and the other facet balances. This pivoting wall also acts as an entrance door to its interior. When looking from the outside, the mirror reflects the surrounding area. When looking from the inside, upon closing the door, infinite reflections appear in all directions. The walls do not touch, in other words, the external area is visible through lines that are 3 cm thick and 3 meters long. These lines are reflected while maintaining the color, light and the movement of the external area, wherein the multiple reflections generate a kaleidoscope effect.

FLOOR is an interactive interface designed to transfer data of strength and movement in the human-human relation and the human-space time relation. The mode of agencying **FLOOR** is very simple: you step on one of the two ends of the piece and this action produces a displacement of haptic information, that is, the displacement of a wave in the direction equivalent to the action. For the other users (not interactors), it is worth noting that the wave in movement lifts a steel plate and the assemblage lifts who or what is on it.

MIRROR is an interactive optic device, designed to distort a mirror on the z-axis from the point of an observer's relative distance. Imagine an optical device with a sensory field of 8 meters to 60 centimeters. Fixed to the wall, this mirror is programmed to constantly measure and react to your distance from it. At 8 meters it will be convex, at 60 centimeters it will be concave and, using a co-efficient of average distortion in centimeters, it will assume, in function of the distance parameters that you generate, intermediary positions from one extreme to another passing (of course) through the plane position.

SOLAR is a robotic installation designed to simulate qualities and measures of solar light in relation to man-space time. The interactor can agency SOLAR in two manners: he can control his geographic position and time with his feet and/or he can speak with it. Agencying via positioning makes it possible for the interactor to inform his geographic position to a data bank. Agencying via voice command or rotating dials makes it possible for the interactor to particularize a date and a moment of an event. For example: when the interactor says "August 03 at 3 p.m.," the system associates to this command the information to his relative position, which makes it possible to simulate the solar light intensity relative to the space-time solicited.

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Netart Latino “database”/ Interface-Map

[illegible]

netart latino “database,” banner in ASCII, 2000.

I said School of the South; because, in reality, our North is the South. There should be no North for us except the polar opposite of our South. That is why we now turn the map upside-down, thus giving us a true notion of our position rather than seeing ourselves as the rest of the world wishes. From now on, the tip of America, stretching outward, insistently points to the South. our North.

Joaquín Torres García. *Universalismo Constructivo*. Buenos Aires: Poseidón, 1943. (Cecilia Buzio de Torres, 1997)

You connect the dots. You pick up the pieces.
Sharkey's night (Laurie Anderson, 1984)

Netart latino “database” was born in 1999 and consolidated in the year 2000. It was not devoid of humorous and cynical allusions to the situation in which we Latin Americans found ourselves. Its interface, an inverted map of

South America drawn in ASCII, is an obvious tribute to the work of Joaquín Torres García and uses “poor” (low-tech) design resources (ASCII sketches had always been a useful tool for designs in net contexts that operated very slowly). Even the word “database” (always in quotation marks) is an exaggeration, because the site only offers one HTML file in list format.

With regard to its contents, one has only to read the description of the links to understand the futility of encapsulating all “Latin American” things, something that Laura Baigorri skilfully articulated in her curatorial text entitled “Artistas Latinos Making Global Art” (Baigorri, 2006).

The *netart latino* “database” was conceived with a completely unique and subjective intention in terms of criteria. Like any personal selection, it is “partial and arbitrary” and never aspired to be a mere list. The project is highly personal in that it features links which, both personally and as an artist, I found interesting for specific reasons. I usually chose them based on their aesthetic pursuits, their formal proposals, their manifestos, their reinterpretations, etc. Nearly all of the links were carefully considered and weighed, explored with thoughtful deliberation. They were both my personal Net-surfing recommendations and a mapping of the network in which I was moving at the time, a map of relationships and of works of reflection and collaboration.

Netart latino “database” was born of a personal determination to lend visibility to a number of links created by net artists working from Latin America, though not all of them are exclusively “Latino”. On the other hand, as Laura Baigorri accurately points out in her curatorial essay “Artistas Latinos Making Global Art”, there are also links by artists who are in Latin America but offer more global formal proposals or go straight to the formal essence of code, the erroneous use of the same (the error as an aesthetic approach and strategy), etc. This map is motley and undoubtedly reveals the intention and personal whims of the person behind it.

Netart latino “database” was conceived as a response to various European and North American (and even Latin American) theoretical works on netart in which the same artists and artworks were mentioned over and over again. These icons from the “heroic” era, were the ones that first, best and most intelligently constructed the legend of netart and its artists. The construction was intensely interesting and admirably accomplished. Yet the incredible thing is that, when academia began to take an interest in our geographic region, that first manifesto and legend was referred to time and again in reflections on the subject, without any attempt to further plumb the depths of the Web.

The *netart latino* “database” was created for the purpose of asserting, with touches of irony and a few subtle references that were sometimes ignored, that “our” story must also be told: that we have our own “heroes” and that many of the works touted as pioneering endeavours in other latitudes were also being developed simultaneously by us.

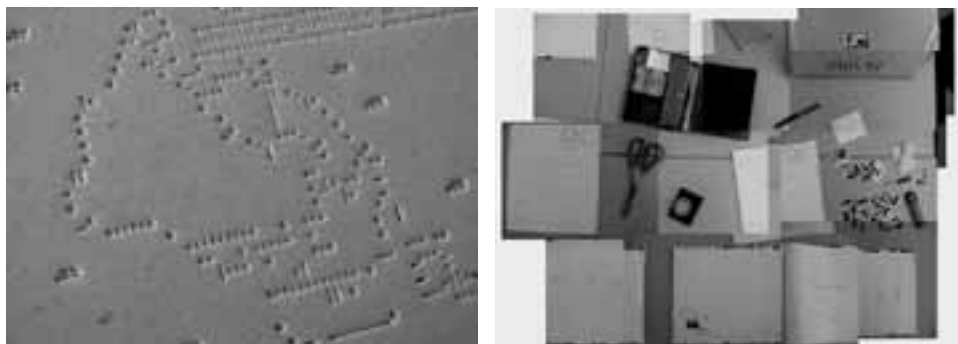


Fig. 1: netart latino “database”: the book, 2010.

“netart is not dead, it just smells funny.”

The HTML page was sold to MEIAC for 0.99 € in 2008. In February 2010 a book about this project was published.

Book: netart latino “database”

Editor: Nilo Casares. Writers: Laura Baigorri (Spain), Giselle Beiguelman (Brazil), Nilo Casares (Spain), Brian Mackern (Uruguay), Lila Pagola (Argentina), Gustavo Romano (Argentina). Designed by fündc. Publication by MEIAC. 500 copies (35 signed and numbered)

ISBN: 978-84-613-4394-2 / Depósito legal: ba-6-2010

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On Mobile Crash

It has been said, it is a common place: new trends in portable devices boost not only consumerism but also a fetishization on owning products that not long ago we did not notice we needed them. The hype on mobility overrides real needs and drives endless releases of phone models promising features expensively charged by local carriers or that would never work as expected.

Motorola and LG have launched more than 150 cellular phone models each in the last 6 years. Samsung has released more than 300 in the same period of time. Most of these products will not stay on the market for long but produce a definitive, instant desire on the customers, due to their latest features. With a slightly different strategy Apple has launched just 3 iPhone models so far, but is taking vast advantage of such predisposition of consuming. For its 4G model (out on June 24) Apple is expecting to sell no less than 20 millions of units until the end of the year.

This reminds me of Bruce Sterling's speech at ISEA Montreal, back in 1995. After mentioning the technological rhetoric present in the 90's culture, he took his brand new PowerBook to compare how little such device would last compared to its source reference, saying that even the cheapest paperback book would outlive his machine quite easily.

PowerBook is a good name, but not a really pretty name. Personal computers have had much prettier names. Like the Intertek Superbrain II. It must have been extremely difficult not to buy [one], even though that machine is absolutely as dead as mutton. (Sterling, 2005)

In his ironic speech Sterling lists dozens of dead media and pretentious gadgets, and after 15 years we know what he meant: "But wait! There's more! Dead mainframes! (...) Dead supercomputers. Dead operating

systems,” he continues. In fact, for some existing products today there are a myriad of dead media, meaning also *obsolete language* disappearing together with the dead systems.

Critical approach

In Brazil the majority of people from lower classes will have access to a mobile (smart)phone, with computing capabilities before they will put their hands first time on a computer. 3G networks are superseding the amount of data traffic over the wired, physical Internet. Unfortunately, due to the high costs of data access in Brazil, accessibility is not yet the right word for this phenomenon, but increased consumerism is. It also does mean *planned obsolescence* attached to the hundreds of mobile devices models spread over the world in an escalating fashion. In the name of market niches or presuming regional cultural preferences, but always spotting alleged needs, it is just an economic strategy. A huge thing, actually, when we take into consideration that emergent economies such as Brazil, China and India “have jumped into the networked culture skipping the landline communication moment”, relying on wireless-based infrastructures, as Giselle Beiguelman reminds us on her notes regarding the work *Mobile Crash*, focused here.

Beiguelman calls anthropologist Néstor Canclini to state: “the new communication technologies have expanded the notion of citizenship, incorporating consumption practices to its exercise” (Beiguelman, 2010). It exposes a link between consumerism and citizenship in a way that leads us to believe that participation in the social public environment (both physical and online) has been truly dependent on mediation technologies – increasingly through portable devices.

If our entire culture was sucked “into the black hole of computation, an utterly frenetic process of virtual planned obsolescence” as Sterling has said, we may now experience the crashes related to the mobile media.

Artistic approach

Mobile Crash is a project I made after my involvement with mobile media technologies [1]. Developed as an interactive installation it is constituted by four projections in a room with a respective direct sound, creating an immersive audio and video environment. Through the viewer’s interaction a series of “sentences” or rhythmic sequences are reproduced in an increasing scale of intensity. Images show devices and equipments in state of obsolescence being hammered. It invites the public to share the actions in a kind of catharsis, which can be collective or individual.

The interface, built as a customized IR-camera detection system, was developed for the work with the intention to create a truly friendly system – and has proved to be very intuitive, robust and reliable [2]. Once the viewer enters the space the camera detects his/her direction regarding the screens and would respond accordingly, by playing a series of video sequences in the related screen. Inside the room, one would just point to one of the four screens to make it trigger the videos. It produces immediate dialogues

between the screens as in a kind of live-video set composed by a series of instant *mash-ups*.

Pointing gestures are a basic input for running the system, which is detected intuitively by the audience, in a progressive sound and visual chain, also escalating in terms of intensity and power. The sequences would reach up to 12 levels, according to the persistence of the player.

To increase the power of the hammer, producing a noisier action results in a sort of relief. It might be the desire of many to hold the hammer seeking to achieve a catharsis, a little revenge against consuming so many technological devices that will not be around for long in their lives. How attached can we become to these little machines? – we might resound Sterling's questions mentioned at the beginning of this article.

Through different approaches, Mobile Crash focuses the instability of a new medium, addressing the fragility of language involved in an image production fed by *fetishization*. This might bring an anachronistic view to the current technological media in times of obsolescence and mobility.

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Water-Art-Technology

Mexico City was founded on an island of the lake basin of Texcoco around 1325, since the founding of Mexico Tenochtitlan it was the interest of its residents to amend the natural conditions of the ecosystem.

One by one, their leaders were extending their gain ground against the water surface, to build their temples and causeways, at first it was developed in a sustainable manner, "chinampas" or floating gardens where developed, creating a very successful method of agriculture due to the constant irrigation of artificial canals that supplied constant humidity to the Milpas. The great Lake Texcoco, was yielding little by little over the centuries to population growth and urban sprawl. With the arrival of the Spanish and their conquest of the city (which was partly due to its lake condition) the valley had an accelerated change. In a phased manner the basin was dried, steadily expanding its territory, the Spanish used the indigenous to fill the lake, the canal systems and the floating gardens were destroyed, causing floods and droughts, the old drainage systems were modified. With the independence of the Spanish realm, we have the dependency on ecclesiastical and political institutions that had no interest whatsoever to be in harmony with nature, but to conquer it.

In the modern era with the invention of the internal combustion engine, the automobile and the discovery of large oilfields in Mexico, streets and roadways were constructed over the last rivers intending to conclude the conquest of the Texcoco lake. The city was literally covered with asphalt. This relationship of modernity and conquest of natural areas without future prejudices is one of the major social issues in Mexico today.

In recent years it has been my interest to develop an artistic practice that reflects on the technological processes and the active relationship with the energy and the political, social, natural and spiritual implications. It is of particular interest to me, to reflect on the obsolescence of the institutions and

the systematic energy waste, so as to link the understanding of the metaphorical relationship of water with electrical and spiritual energy.

Spark-un-plug 2005, 2007

is a procedural system that reflects on the forced implementation of obsolete motor technologies, which has the planet on the edge of an ecological crisis, due to the implications of global warming. The piece is a theoretical model of energy feedback which is engaged in a dialogue between natural and technical systems. The work is a wood lattice that holds 300 spark plugs arranged in 3x3 matrix, that is confronted with a block of ice. At the matrix, producing sparks with high voltage, visual and sound patterns emerge, as simulations of rain, steam and ice crystals, the three states of water are observed. These simulations are conditioned by natural phenomena of the ice such as humidity and temperature. The oil and automotive industries have kept the world's population addicted to obsolete technologies. [Fig. 1]



Fig. 1

Induktokhor, 2009

proposes a reflection on the technological developments of Faraday, Edison and Tesla on energy and the electromagnetic induction, relating them with the Tibetan Buddhism practice of energy release of the prayer wheels or Mani Khor. Induktokhor is a mantric machine commissioned by Karla Jasso for the exhibition Sinergia at Laboratorio Arte Alameda. With this work two similar principles but with different characteristics are correlated, first the electrical machine that induces electric currents by rotating magnets and coils, generating electrons in result, a principle which led Nicola Tesla to the development of an industry that provides 90 percent of the electric power in the world, the vast majority using water as a mechanical power. The mani khor or prayer wheels are Tibetan machines that are used to emanate spiritual energy represented as desires, the Sanskrit mantra "Om Mani Padme Hum" is carved at the outside of the cylinders and is written thousands of

times rolled in papyrus and kept in the inside, as the practitioner spins the cylinder, induced energy is released. Inductokhor is a kinetic machine, which depends on human interaction, to release different kinds of energy, mechanical energy that is transformed in a electric current that activates electrical circuits transforming that energy in sound. The electrical current is also used to produce electrolysis to purify water and release atoms to use them in an hydrogen cell to transform them in electric current [Fig. 2].

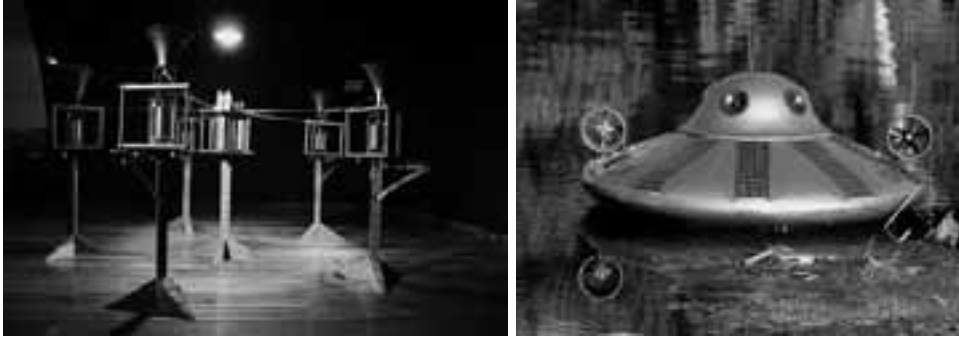


Fig. 2+3

Nanodrizas.org

The Nanodrizas are floating autonomous robotic artifacts forming a network of wireless sensors, which measure, in real time, the water environmental conditions, transmitting data to local decentralized systems of augmented reality and Internet applications for interpretation, visualization and analysis, establishing a radio frequency communication network, satellite Internet and GPS. As a consequence, they intervene the space with synthesized sound and release bacterial and enzymatic remedies in situ. Nanodrizas, inspired by science fiction, have the shape of a flying saucer, an ideal exposed surface for the collocation of photovoltaic cells for energy harvesting, so as to provide the electronic and autonomy system's needs. By sharing the analyzed information, Nanodrizas create a symbiotic network of mutual benefits that is reflected in the Internet as one more of the aesthetic, tactic and conceptual sub-products generated by the intention of recovering the tributaries of contamination. [Fig. 3]

<http://www.nanodrizas.org>

<http://www.arc-data.net>

P 46

Codifying History (Archive/Preservation I)

Convened by Nick Lambert (gb) /
The AHRC Computer Art and
Technocultures Project

■ Nick Lambert (gb):
The CAT Project as an Historical and Archival Collaboration

■ Honor Beddard, Doug Dodds (gb):
Codifying History: The CAT Project Examines the International Trajectory of Computer Art 1975-2000

■ Francesca Franco (gb):
'Computer Art in the Mainstream'. How the Venice Biennale Responded to the Historisation of Computer Art in the 1980s

Focusing on the scope and development of "Computer Art", this panel presents the CAT project's current research, dealing with issues of archiving, curation, conservation and historical research. Tackling e.g. aesthetic and theoretical points concerning the survival of material archives, the panel also examines what aspects of early computer art activity might be relevant to the contemporary digital scene and might also influence its future development.

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Lambert** (gb)Birkbeck College, University of London
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n.lambert@bbk.ac.uk**The CAT Project as
an Historical and
Archival Collaboration**

The Computer Art and Technocultures Project is a resource enhancement project funded by the Arts and Humanities Research Council, running jointly between the Department of History of Art and Screen Media at Birkbeck College and the Word and Image Department at the Victoria & Albert Museum. Our initial brief was to catalogue, digitise and explore the Patric Prince archive of computer art and related documents, with a remit to investigate the major exponents of computer art from 1975 to 2000 and better understand the evolution of this new field of art. A more pragmatic aim was to undertake the preservation of a new media archive, albeit one that was mainly paper-based, at a major museum and use it as a test-case for future acquisitions in this area.

Both Birkbeck and the V&A had previously worked together to accession the archive of the Computer Arts Society that covered the pioneering period in computer art, from around 1960 to 1980. This was an outcome from the previous CACHe Project that had run at the Department of History of Art from 2002 to 2006, under the auspices of Charlie Gere with Paul Brown, myself and Catherine Mason. CACHe successfully identified and reconnected with an almost-forgotten stratum of British post-war art that worked with cybernetic concepts, systems art and early computers, as documented in the project book *White Heat, Cold Logic: British Computer Art 1960-1980*.

Such was the interest generated by this project that Douglas Dodds, Head of Central Services at the Word and Image Department in the V&A, was able to convince the museum to acquire the Computer Arts Society collection in late 2005. This served as the basis for negotiations with Patric Prince, a Los Angeles-based art historian long associated with the SIGGRAPH Art Show and the Californian computer arts scene in general. In 2006 her archive was donated to the V&A via the American Friends of the V&A, and shipped to the UK. This formed the basis for our grant application to the AHRC and the subsequent development of our project. The grant was jointly written by Dodds, myself and Professor Jeremy Gardiner who became our Senior Research Fellow. Subsequently Honor Beddard became Computer Art Project Curator

and Francesca Franco joined us as Research Fellow. Between us, our interests span the archival, the curatorial, the preservation of digital archives, the emergence of specific types of digital art on America's West and East coasts during the 1980s, and the representation of digital art at the Venice Biennale.

My particular interest in the Patric Prince archive is historical and aesthetic: to what extent can computer art be said to develop distinct styles and approaches over time, and is it mainly in response to the technological development or other cultural factors? Building on my experience with CACHe, I was interested to see how far the American and international artists represented in Prince's archive followed similar lines of development. The key factor about the archive, to my mind, is that it covers the decade from around 1977 through 1987 when computer imagery went from being a specialist, even scientific, pursuit to a widely-used tool accessible to anyone with a reasonably powerful desktop computer. The phrase "computer graphics" entered common parlance and also became part of Western visual culture, to the extent that films and TV programs seeking a "futuristic" gloss included green-lined vector graphics as part of their aesthetic. Meanwhile, entire industries from publishing to video production shifted wholesale to computer technologies, irrevocably altering our relationship with the image.

Ever since reading James Elkins' book *The Domain of Images*, I have been as interested in the non-art aspects of general visual culture as the art-specific ones, especially in relation to digital imagery. It is obvious from the history documented in the Patric Prince collection that as the technologies of digital image-making were developed from the mid-1970s onwards, artists informed the process in a number of ways. Firstly as a result of being employed by the companies developing these tools in a purely scientific capacity; secondly through being artists in residence; and thirdly as expert users feeding back their comments and requests to the development community. For instance, the team at New York Institute of Technology, including luminaries such as Dick Shoup and Ed Emswiller of Sunstone fame, informed the basic techniques used by all subsequent image editing and animation packages. In a different way David Em, as artist-in-residence at NASA JPL's graphics laboratory, showed the technicians wholly new ways to use their software as he used it for artistic purposes. Other digital artists went to work for the first computer graphics and special effects companies in the early 1980s.

The great strength of the Patric Prince archive is its assemblage of catalogues, letters, interviews and ephemera that Prince gathered as she acquired the main body of artworks. This is a cultural cross-section of some importance, dealing with both the USA and the international context of computer art and its surrounding visual culture. Examining the artistic use of computers in this formative period can answer some questions about the fascination of screen-based images. Additionally, the acquisition of this material demonstrates that major cultural institutions are now ready to take on historical new media archives and study them in context, which makes an interesting case study in itself.

Codifying History: the CAT Project Examines the International Trajectory of Computer Art 1975-2000

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Curator

Douglas Dodds (gb)

Word and Image Department, Victoria and Albert
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The Victoria and Albert Museum is the UK's national museum of art and design. In recent years the V&A has received two major collections of computer-generated art and design, one from the Computer Arts Society, London, and the other from Patric Prince, an American art historian and collector. Together with more recent acquisitions, the museum now holds the UK's national collection of this type of material. Our holdings continue to grow and now include some 500 art works, consisting predominantly of two-dimensional works on paper. Alongside the art collection, the V&A also holds the archives of both the major donors. Patric Prince's archive contains her ongoing correspondence with artists, details of the many exhibitions she organised for SIGGRAPH and the Los Angeles New Art Foundation, exhibition cards and press for most major computer-related art exhibitions and conferences from the 1980s onwards, as well as a substantial library of important books and texts. The archive also includes a selection of audio-visual material and computer files containing artists' interviews and show-reels.

The computer-generated art collection sits within the V&A's Word and Image Department, which includes prints, drawings, paintings, photographs and designs, as well as the National Art Library. The Museum began collecting computer-generated art and design as early as 1969, with the purchase of a portfolio of prints from the Cybernetic Serendipity exhibition held at the ICA in 1968. However, activity ceased until relatively recently, in part because of the difficulties of preserving fragile computer-generated material, but also because of its exclusion for many years by the mainstream art world.

In its early years as the South Kensington Museum, the V&A attempted to unite the arts and sciences. Its collecting policies continue to emphasise the importance of technique and process, meaning that the Museum is ideally placed to accommodate a collection of this nature. The computer's arrival into creative practices and industries around the world must rank as one of the most culturally significant developments of the twentieth century. By situating the collection with the Word and Image Department, we are able to assess the impact of this arrival on the field itself, as well as on related

areas such as graphic design or printmaking, in which the V&A also specialises. The collection's position amongst the wider departmental holdings, which now consists of ca. 1.5 million objects, allows for new approaches to the study of computer-generated art and design. For example, an early photographic print from the collection by Ben Laposky which was created using an analogue oscilloscope, was included in the Museum's 2008/2009 *'History of Photography'* display.

The Museum's 2009/2010 display entitled *Digital Pioneers* showcased highlights from the collection and did much to raise awareness of this lesser known field of art and design. The display ran consecutively with *Decode: Digital Design Sensations*, a major exhibition of contemporary digital art and design in the V&A's Porter Gallery. The exhibition featured a number of major new commissions and included such well known names such as Danny Brown, John Maeda, rAndom International and Julius Popp. The opening section of *Decode* featured works that had been carefully crafted from code, demonstrating the legacy that had been left behind by the 'digital pioneers' of decades earlier. *Decode* attracted a younger audience to the museum; a demographic highly conversant with digital technologies, yet mostly unaware of art and design's 50 year relationship with computing. The importance of this relationship was grounded in the V&A's *Decoding the Digital* conference in February 2010, which brought together early computer art pioneers, such as Frieder Nake and Roman Verostko, with contemporary designers such as Casey Reas and Karsten Schmidt, for whom the early practitioners had been a source of inspiration.

The collections of computer-generated art and design have brought their own particular sets of problems in terms of documentation and preservation. With funding from the Arts and Humanities Research Council, the Museum has been involved in a research project with Birkbeck. A lasting benefit of the project is that all of the artworks are now included on the V&A's website and can be found via the "Search the Collections" service (at collections.vam.ac.uk). In parallel, we are reliant on new and ongoing conservation research to help deal with preservation issues. The staging of *Decode* meant that artists and designers had to work closely with the V&A's Conservation Department to accommodate factors such as the duration of the show and its interactive nature. At the final count some 90,000 visitors came through the exhibition's doors in just 4 months, providing us with a valuable insight into the problems of acquiring and maintaining digital art. *Decode* also offered an opportunity to revisit our policy for collecting born-digital art and design. In May 2010, the V&A decided to acquire *Study for a Mirror*, by rAndom International, an earlier version of which was included in the show. Stemming from earlier investigations into printing or painting with light, *Study for a Mirror* detects when a viewer is in front of the work and then 'paints' the onlooker's image onto the screen. Within minutes the image has faded away and the portrait is lost. The impermanence and ephemeral nature of the work hints at many of the problems that museums face in collecting this type of material, including questions of durability and life span.



Francesca Franco (gb)

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“Computer Art in the Mainstream”: How the Venice Biennale Responded to the Historisation of Computer Art in the 1980s

Working for the Computer Art & Technocultures project has given me the opportunity to analyse and research the material left by American art historian and independent curator Patric Prince to the V&A. This experience also has allowed me to connect this research to my personal interest in computer art and the Venice Biennale.

This paper investigates the main points of Patric Prince's article *“Computer art in the mainstream”* written for the 1986 SIGGRAPH catalogue. How do these points connect to the Venice Biennale's approach to computer art in the 80s?

The mid 1980s have witnessed the first genuine attempt of historisation of computer art. A seminal example is given by the major retrospective of computer art organised by Patric Prince for SIGGRAPH in 1986. The ACM/SIGGRAPH '86 was a travelling art show connected to the SIGGRAPH Conference that took place at the Convention Centre in Dallas. Patric Prince, chair of the 1986 SIGGRAPH exhibition, chose that year as a historical turning point to celebrate the 25th anniversary of computer art. To mark this anniversary Prince invited most computer art pioneers to present their works. The exhibition featured a total of 450 works and included 6 hours of animations, two projected installations and 18 interactive and online works. Among the artists participating to the show were Manuel Barbadillo, Charles Csuri, Billy Culver, Jeremy Gardiner, Kenneth Knowlton, Masao Komura, Ben Laposky, Manfred Mohr, Vera Molnar, and Frieder Nake. A lecture presented at the Dallas Art Museum titled *“Computer Art in the Mainstream”* was presented by Patric Prince and artists Tony Longston and Barbara Nessim.

The historisation of computer art in the mid 1980s can be seen as an essential factor that helped making computer art 'safe'. This allowed the acceptance of computer art in conservative art institutions worldwide, particularly the Venice Biennale. How did the Biennale respond to these circumstances, in a decade where the interest in technological developments applied to art was so central? To answer this question I will analyse two main Venice Biennale's shows, i.e. the 1980 Biennale show *Cronografie* and the 1986 Biennale devoted to art and science.

P 47

Leonardo Education and Art Forum (LEAF) Meeting: Art-Science – Curricular Models and Best Practices

Coordinated by Edward Shanken (us/nl)

- Edward Shanken (us/nl), Paul Thomas (gb/au), Jill Scott (au/ch), Jennifer Kanary Nikolov(a) (nl/gb): Art-Science: Curricular Models and Best Practices. Leonardo Education and Art Forum (LEAF) Workshop

This meeting addresses difficulties typically encountered while undertaking art-science research, teaching, and when meshing curricula from diverse fields. Following a 20-minute introduction to various aspects of this theme, attendees will participate in one of the 90-minute working group discussions led by the panelists. Issues to be addressed may include: integrating the knowledge base and skills of different disciplines; evaluating the credibility of references and key arguments; locating appropriate collaborators outside one's field; forging models for interpretation, evaluation, and accreditation. To conclude, we reconvene as a group to identify and share ways to surmount some of the difficulties commonly encountered in interdisciplinary art/science practices and curricula. Our goal is to publish a guide to effective models and best practices.

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Art-Science: Curricular Models and Best Practices. Leonardo Education and Art Forum (LEAF) Workshop

The Leonardo Education and Art Forum (LEAF) promotes the advancement of artistic research and academic scholarship at the intersections of art, science, and technology. Serving practitioners, scholars, and students who are members of the Leonardo community, we provide a forum for collaboration and exchange with other scholarly communities, including CAA, SIG-GRAPH, SLSA, and ISEA. Chaired by Shanken, our workshop at ISEA2010 will address difficulties typically encountered while undertaking art-science research, teaching, and when meshing curricula from diverse fields. Following a twenty-minute introduction to various aspects of this theme, attendees will participate in one of the ninety-minute working-group discussions led by Nikolov(a), Scott, and Thomas, international experts in the field. Our aim is to identify and share ways to surmount some of the difficulties commonly encountered in interdisciplinary art/science research and curricula with the aim of publishing a guide to effective models and best practices.

Issues addressed may include:

- How can the knowledge base and skills of different disciplines be integrated in the classroom?
- How can the credibility of references and key arguments in another field be judged?
- How can appropriate collaborators outside one's field be identified?

- How can interdisciplinary curricula be evaluated and gain accreditation?
- What are some best practices for interdisciplinary research practice and curriculum?

Nikolov(a) notes that in recent years art education programmes have shifted into the realm of knowledge economies in which certain art practice's are regarded as a creative form of knowledge production. The more we learn about the social and economical values of such knowledge productions the more Masters and Ph.D. artistic research programmes seem to appear all over the world. In order to address their pertinent research questions the researcher artists that enter such programmes often find themselves in complex trans-disciplinary structures for which collaborative and organisational skills are imperative. Too often a lack of these skills gets in the way of successful research practices. This sets a challenge for bachelor education curricula. How to prepare artists and scientists for future collaborations? How to develop a curriculum that facilitates these Master and Ph.D. programmes of artistic research? By bringing talented students from the University of Amsterdam and the Gerrit Rietveld Academie together in the experimental honours programme Art and Research we allow for early insights and hands on experience with the values and pitfalls of art-science collaborations. In this presentation I will address case studies that show the need for more focus on artistic research educational structures on the Bachelor level.

Scott points out that by now there are established Ph.D. programs that specialize in offering more established artists and designers from all disciplines the opportunity to focus on specific media and art research topics for their careers. For example, the Z-node (University of the Arts, ZHdK in Zurich) part of the international "Planetary Collegium," has established protocols for undertaking work that joins theory and practice, helping students make the transitions to scholarly reflection and robust research. The curriculum is supported by group communication and correlated research topics, composite sessions, and international conferences at which other Collegium nodes convene. This structure enables researchers to explore transdisciplinary and transcultural theory about communication, collaboration, social science, natural science, cultural difference and environmental sustainability. Scott's workshop will discuss how curriculum can relate art and design practices to applied scientific research, especially in the areas of psychology, biology, neuroscience, physics and artificial intelligence. The discussion will consider how to accomplish this goal, which demands: 1) exploring and defining new cultural and environmental epistemologies between design, art, science and technology; 2) searching for original hybrid combinations of media and art practices and scientific theories that are engaged with critical social and ethical discourses; and 3) theorizing the future impacts of art and technology on both western and eastern cultures.

Thomas observes that a profound shift is occurring in our understanding of postmodern media culture. Since the turn of the millennium the emphasis on mediation as technology and as aesthetic idiom, as opportunity for creative

initiatives and for critique, has become increasingly normative and doctrinaire. The focus is on implementing research strategies within the fine arts that challenge past disciplinary orthodoxies and epistemological constraints, in a quest for more productive and synergistic intellectual and practical methodologies between art, science and humanity. The focus will be on exploring capacity for critical engagement, socio-cultural reflection, situated academic critique and plastic processes. To explore ideas that will provide a basis for generating different and potentially more expansive understandings of complex transdisciplinary issues, taking account of multiple perspectives and contingencies. Institutional modeling of alternative curriculum approaches post new media is intended to demonstrate the academic viability, scope and rigor of transdisciplinarity.

P 48

New Art Theory II

- Christiane Heibach (de):
Multimedia Art and Multisensory Experience. Towards an
"Epistemology of Multimedia"

- Eva Kekou, Ioannis Zannos, Nicolas Remy (gr):
What's All the Noise about?

- Sebastian Schmidt, Thomas A. Troge, Denis Lorrain (de):
Qualia and Conceptual Blending. Another Structure of Music

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Multimedia Art and Multisensory Experience. Towards an "Epistemology of Multimedia"

Multimedia performative forms of art challenge the traditional notion of 'art' in many ways, especially within the context of new media art. But their impact reaches far beyond the pure aesthetic realm: multimedia art demands multisensory perception modes and models for interaction that still lack theoretical foundation.

The dominant epistemological theories in Western cultures are mainly influenced by a separation of the senses in emphasizing their different functions and hierarchizing their meaning. Western cultures have historically developed towards a mainly visual culture, at least also, as Marshall McLuhan pointed out very clearly, because of the overwhelming importance of printing technology (McLuhan 1964). Therefore the development of epistemological models and the establishment of certain cultural dominant media can be seen as inherently interrelated. In this context it seems to be consequent that the multimedial digital technologies challenge the monosensory epistemologies of Western culture, although the eye's cultural dominance can still be observed in discourses around the 'iconic turn' and in the characterization of the 'digital culture' as a visual one.

The dominance of the visual neglects current tendencies in interactive media and performance art which increasingly turn to the other senses, especially the ear and the kinaesthetic proprioception, as Derrick de Kerckhove calls it (Kerckhove 1995). Interactive media installations often demand the immersion of the user's whole body. But what does this 'holistic' perception mode mean in terms of an epistemological theory?

New Media Art's Predecessors and Connected Philosophical Models

Experiencing immersive artistic environments with the whole body means that the dualism of the subject-object relation becomes questionable because we are moving within a surrounding that forms a part of our proprioception and to which we are connected through sensual perception as well as affective and reflective processes and mostly also through action. Such environments have historic predecessors: At the beginning of the 20th century the avant-garde movements began to transcend the established borders between the separated arts music, literature, painting and sculpture and headed for new multimedia art forms. Interestingly enough this is also the time when philosophers like Helmuth Plessner, referring to the phenomenological thinking of Edmund Husserl, aimed to give sensual perception and with it the human body a new meaning for intellectual insight – corresponding to the general increasing attention for a more complex concept of the human being as constituted by intellectual, psychological and physiological components. In his essay “The Union of the Senses” (1923) he not only criticizes the subject-object-division and its neglect of the body but also the implicit epistemological premise that sensual perception is something that can be thought without considering the individual condition of the perceiving subject. He states that there is no sensual sensation as such – our perception is always connected to our momentary situation, related to specific memories, to our affective condition etc. (Plessner 1923, 271). Plessner distinguishes between the physical body (Körper) as something that can be objectively examined and reflected on, and the feeling/perceiving body (Leib) which is an inherent part of our proprioception. This concept of the twofold character of the human body may still serve as one component of a fruitful methodological approach to the experience in immersive multimedia environments. Those are sensed with the whole body while – as we are conscious about moving in an artificially created space – we are able to reflect on our sensation. But this is only a starting point for more complex questions that need to be answered as Plessner for example does not reflect on the possible effects that different sensual sensations might have for our proprioception and what they might have to do with our way of acting.

Multisensory Experience as Contemporary Challenge

So we still lack an elaborate multisensory perception model – neither aesthetic theory nor the cognitive sciences are yet able to explain the interplay between the senses. Additionally both have yet failed to model the interrelation between multisensory perception, conscious mental activity, emotion and bodily action, which often characterize interactive installations and environments. These different but inherently connected processes form nothing less than our ‘experience’ – not only in the aesthetic realm, but also in our multimedia daily environment. Shopping malls for instance are very complex compositions of visual, acoustic, olfactoric, sometimes also gustatory and tactile sensations that aim to increase our desire for consumption. This example shows that such strategies of manipulation are very often linked

to complex sensual sensations that work subconsciously – they constitute a specific atmosphere, a phenomenon that also transcends the subject-object-division as Gernot Böhme pointed out (Böhme 2001, 45). As multi- or intermedia art forms often play with our modes of perception and create certain atmospheres, they can lead us to a more adequate epistemological model that goes beyond the subject-object relation and approaches the different sensual, emotional, reflective processes in combination with action that altogether constitute our experience.

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What is All this Noise About

Soundscape

A telling example of an involuntary soundscape are the sound recordings made by the postman character Mario Ruoppolo for his friend and mentor Pablo Neruda in Michael Radford's film *Il Postino* (1994). In the film, simple recordings made on an island with a primitive recording device are compared to poetry, which Mario wanted to learn from Neruda. The sounds act as metaphors in a double sense: they stand for the experiences of the elements that Mario wants to transmit to Neruda, and they are meant to transport (μεταφέρω in Greek means "to transport") his message to his friend over distance of place and time. Spectacular examples of environmental sounds are the songs of Weddell seals used by Werner Herzog in his documentary about the Antarctic Encounters at the End of the World (2007). These songs sound alien, and express the strangeness of the environment in one of the most remote regions of the world. Because of their similarity to electronic synthetic sounds, they also create associations with the otherworldliness of purely artificial cultural artifacts.

Dérive

The above examples illustrate that sound can be easily dissociated from concrete objects or meanings, and is therefore open to associative interpretations. At the same time, sounds are perhaps more evocative of the environment from which they stem than images, as suggested by the contrast between the postcard in the beginning and the recordings at the end of *Il Postino*. The fact that sound is both more abstract and more location-specific than image predestines it to play a central role in location-specific pieces. Thus, the dislocation of sound from its original surroundings acts as a device for prompting the participants to recreate their own meanings. This explains why sound can play a prominent role in the process of *dérive*. It is exempli-

fied in Alvin Lucier's piece *Quasimodo the Great Lover* whose instrumentation reads "for any person who wishes to send sounds over long distances [...] to capture and carry to listeners far away the acoustic characteristics of the environments through which they travel", and which is based on the song of humpback whales.

The idea of *dérive* as immersion in an environment through free drifting is present in many media art works that employ sound. The innately immersive nature of aural experience is used to simultaneously "embed" and "remove" the participant from the environment. We selected four recent interactive pieces set in urban environments to illustrate different ways in which artists use sound to support *dérive*. Her Long Black Hair uses sound to transport the participant in a journey through time during a real-life walk through Central Park of New York (Cardiff 2005). In *As if it were the last time*, Speakman uses sound to create an alternate narrative played by the participants themselves in an urban setting. Clay's *China Gates* engages the participants as performers in a musical piece that is scored by their movements in open spaces. Finally, *Divided we Stand* creates an audiovisual performance through a metaphorical simulation of a democratic voting process.

Conclusion

The evocative power of sound, its immersive qualities, and the immediacy of auditory experiences make it a prominent feature in art installations in urban environments. By virtue of the above features, sound demands the attention of the participant, and is thus able to overcome the distracting effects of sensory overload.

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Qualia and Conceptual Blending. Another Structure of Music

1. introduction

We would like to show what huge potential resides, for the foundation of a musical analysis concept, in phenomenal consciousness (qualia) and in the conceptual metaphor and in the Conceptual Blending Theory. It would be possible in further work to develop an alternative description of music connecting the actual qualitative experience (qualia) and mental operations of the Conceptual Blending Theory.

2. Selected Test with Musical Qualia

A first test (Fig. 1) shows two motives beginning with the same note. In the first motive the initial note A is followed by neighboring tones in a traditional tonal manner. In a series of experiments with 20 music students, we played the tonal motive first, and the atonal motive only second. For this purpose the examples were recorded by electronic means so that there could be no differences between the durations and the colors of the sounds. After listening, the subjects were asked how strong the representation, i.e. the sound, of the initial A note was in their consciousness after each motive. We detected that, for all the subjects, the representation of the note was still present in the case of the tonal example (quale), while the initial note remained present for only 2 of the 20 students after listening to the atonal motive. This is the effect of the sequence following the note A. In the tonal case, the chunk of the note A is fixed by repetitions and a cognitive structure is built on the accumulation of this note. In the atonal case, this note does not even reappear and is not part of the following sequence: it possesses no significant relevance in the 2 musical bars. Thus vanishes the representation of this quale.

Results our Tests Show about Properties of Musical Qualia

- listening is a highly active process, which segments an ongoing stream of music into qualia with associated saliences; it is a process of understanding, of sense making, not only of signal processing
- consciousness consists in qualia, and the degree to which we are conscious of a quale is proportional to its saliency
- Musical Qualia are created during perception; they do not exist independently; they have different saliences, which indicate their relative significance and can change over time
- time is slower during more salient qualia
- the sense of time can seem to disappear at moments of great musical intensity
- a quale can be retroactively swallowed, or incorporated into another quale



Fig. 1: Difference in the representation of the tonal A at the beginning

3. Conceptual Blending in Music

Music is always a certain kind of concept, which defines a structure. As a result, one can say that the saliences of the sound stream, the concepts of the qualia, are created by the listener. This is done by attempting to discover a meaning, or undertaking a mental organisation of the sound events. If one does not confine only to music, it appears that every concept consists of scripts and frames. This is a mental structure that helps us to record each kind of complex event, and to construct it into a concept. This presumption allows us to consider Conceptual Blending in connection with music. If one applies this model in the above experiment (Fig. 1), there are nine input spaces corresponding to nine notes. During the session, the subjects probably realize that the nine spaces possess common characteristics. We use melodic music generated by a single instrument with uniform dynamics, tempo, duration, etc. This abstraction in the generic space implies the input spaces may be seen as part of a much larger entity, and that a musical connection exists between them.

We assume that the specific information about the phenomenal perceptions (qualia) of each note will be transported into the blend space. There, a second process takes place, whereby the information from the generic spaces will be combined with the respective input spaces. We think this occurs to a certain extent in series, i.e.: input space I + input space II = blend space I + input space III... In addition, a retroactive adjustment exists. This transmits, for example, the quale of the note A in the tonal pattern as a basic structure into the new blend spaces. Moreover, we think that the third process, which is described by Fauconnier & Turner as a phantasy filled simula-

tion according to the laws of logic 3, is composed of two steps. The first step occurs during the generation of the single blend spaces. During this, the simulation functions as a sort of selector, which separates important qualia from unimportant ones. In the second step a final operation is performed, which creates a new mental representation of the nine input spaces. We suppose that it is during these two final steps that the quale of the initial A note remains represented or is swallowed.

Conclusion

The human consciousness is an enormous still unresolved domain of research. We have attempted to show that the phenomenal consciousness (qualia) in music are more structured than it was generally presumed previously. As a result, one can say that the musical qualia are not the remainders of objective experience, but the opposite. They are the fundamental elements, from which experience is forged. We also showed that, by means of Conceptual Blending, a connection between musical qualia is possible.

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P 49

Media Gardens

- ■ Thomas Munz (de):
■ The Laboratory Garden
- Peter Veenstra, Geert-Jan Hobijn (nl):
Trains, Cars and Trees
- ■ Sofian Audry (ca):
■ Absences, Public Art Interventions in Natural Spaces Using
Autonomous Electronic Devices
- Shannon C. McMullen (us):
■ Machines as Gardens: Visual Culture and Post-steel Sensibilities
in the Ruhr District



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The Laboratory Garden

The Laboratory Garden is a research project and events series in development that focuses on the emerging artistic practice of incorporating plants, or more generally organic systems, into contemporary artworks using current technology and media. The project investigates this practice against the background of a larger conceptual framework in which these artworks play not only a solitary role, but are part of a proposed living heterotopian laboratory; a *garden realm* creating relationships between the artwork, its surroundings and its viewers. Major focus points are art and artists working with living systems as a paradigm of unfinished interaction in the context of electronic arts, where experimental practice between human and nature is marked by its character of real-time slowness and its fragile and temporal products. The emphasis on the garden as a laboratory primarily focuses on the aspects of interaction between living and organic systems, as well as technical and technological ones, that enable a shift into augmented incidents and environments.

Garden as a Laboratory for Artistic Experimentation: The larger aspect of the garden as field of experimentation – cultural, political and artistic – lays the groundwork for looking at it as a heterotopia, as (after Foucault) an *other* or *counter* space. At the same time, it can also be a testing ground for individual and societal conditions, a place where economic and ecological circumstances can proxy new paradigms of interbreeding innovation and tradition. The project seeks to go beyond the question of artistic human-plant interaction. It brings its subject into the realm of an expanding electronic and digital framework and its underlying currents – and the imagination of the garden as a microcosmic reference space in contemporary artistic practice.

Garden Art and Collective Memory: The idea of the garden may serve both as a blueprint for collective memory, as well as a space for individual artistic positioning. For the collective memory (after Halbwachs) the garden opens up a space to develop common ground on the basis of group-specific behav-

ious. The original distinction between communicative and cultural memory thus finds its common expression in the garden itself: It is both a manifest document of an oral history of experience and tradition as well as a universally comprehensible monument.

Garden as Counter Space: “The garden is the smallest parcel of the world and then it is the totality of the world.” According to Michel Foucault, gardens are heterotopias; they are part of society, are situated in its middle, yet, they are places that reflect, question and challenge other places and turn them into their opposite, into *counter spaces*. Foucault therefore describes the garden as the “oldest example of these heterotopias that take the form of contradictory sites.” These heterotopias have a tendency to appear in times of crisis and change, in which hitherto existing rules need to be reconsidered. What are the connections between garden art and the modern sciences? For a number of very different scientific disciplines the garden has become a field for experimentation with “nature” and a model for an ideal order, whereby the innovative connections between science and art as well as the intermix of imagination and recollection have played a significant role.

Garden as a Medium in Artistic Practice: The garden and its variation of the suggested heterotopic laboratory connect to the arts in general and the electronic arts in particular in various ways. It is a place for the presentation of works of art, as an artwork in and by itself, and a medium for artistic practice. Questions arising in this context are, among others: What is the function of gardens in the media and the arts, such as visual arts, media art, bio art and interactive art? What are the traditions of artistic practice in this field today? And what are the new qualities, opportunities and challenges of working with nature and organic systems against the backdrop of technological developments and ever increasing potentials of mediated cross-systemic connectivity?

Trains, Cars and Trees

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Composed City

In 2008, Staalplaat Soundsystem and Lola landscape architects started to collaborate on projects that are at the interface of public space design and sound art under the name of Composed City. Sound art as a piece of landscape, and sound design of public space in order to create local identity, evoke play or contemplation, form the main subject of this collaboration. From an architectural point of view, there are very few good examples of permanent art in public space, let alone permanent sound art in public space. Therefore, these projects feel as artistic experiments rather than works of art. And no experiment can stand without a critical review. In this article, two projects are described and reviewed. Although they are very different, the projects share the love for the sound of trains, cars and trees.

Project 1: Sound barrier and Aural Garden

In Dordrecht (NL), a new residential area is planned next to a busy rail- and highway. Due to regulations a large area of buffer space is reserved in between infrastructure and neighbourhood, partly filled with a sound barrier. In the design of this area we dealt with sound both by changing the physical circumstances that affect the existing traffic sounds and by adding a new layer of sound, produced by trees.

In the design of the sound barrier, a playful approach was used by converting the homogeneously sound blocking landform into a more complex form that creates a variety in sound passages and insulated areas. This primarily acoustic approach of the sound barrier has great visual consequence: instead of a monotonous dike, a series of pyramid-shaped hills is created, varying in height between 5 and 12 meters. In order to amplify this pronounced shape, every hill is coated in a different vegetation mix and planted

with a different tree species, each with its own specific leaf sound. These trees create a rustling layer on top of the sonic play of passing through and insulating train sounds.

North of this sound barrier, on a 4 hectare island in between railway and highway, we have asked Max Neuhaus (1939-2009) to make a design based on his ideas of the Aural Garden: a garden to listen to, that is purely designed on its aural qualities. Different than the sound barrier, Neuhaus' idea was to make the park look as unnoticeable and normal as possible, in order to bring a 'pure' sonic experience. Unfortunately, he hasn't been able to finish it. With the help of his close colleagues, Pidu Russek and Andres Bosshard, we are busy developing a garden that is in line with his ideas. The main ingredients of the garden will be water, (parabolic shaped) walls, local depressions and vegetation, all used as instruments to reflect, absorb and block the sound of cars and trains. Gravel paths and trees are used to add sounds that make the visitor feel comfortable to open up to the play of traffic sounds.

Project 2: Train station concert and car horn concert

For the Today's Art festival in The Hague we applied the idea to use architectonic elements as sound devices to the The Hague Central Station, in collaboration with Mike Reinirse, Erik Hobijn and Mark Bain. To explore the train station as a sound source, we transformed it into an instrument, using the train movement in the station as faders for the mixing of 10 train horns and station sounds. This resulted in an intense 30 minute concert, that even led to hysteria of an unaware train passenger.

The same concept was translated to a totally different situation: the car traffic system of New Delhi, India. One prominent user of the city's road structure has forced himself as a main player: a small three wheel green and yellow Tuk tuk taxi, that fills the city streets by the thousands. Thanks to a special electronic device we were able to control their horns at distance, and play a huge Tuk tuk orchestra in free movement, in contrast and together with the overall city symphony.

Conclusions

When looking at these experiments, some conclusions can be made. First of all, when working with sound, it's very hard to control the dynamics of public space. During the Tuk tuk concert, much of the car horn concert was drowned by city noise. It appears to be almost impossible to calculate the sound effects of the parabolic shaped walls of the Aural Garden due to wind and temperature dynamics and with each frequency behaving differently.

Within the experiments we can discern two approaches that face different challenges. When using existing sound sources and bending or changing the effects of the physical space around it, the dependency on these sound sources is the most important issue to overcome. When adding new sounds to the existing soundscape of the city, the hardest part is to control the acoustic characteristics of the surroundings space.

Secondly, we believe that permanent sound art can add a special layer in the experience of public space, but is modest in its impact. In fact, the length in time of the artwork seems to be inversely proportional to the intensity of the experience, with the train concert leading to personal hysteria at the one end and the enjoyment of rustling tree leaves at the other end of the spectrum. For both short and long pieces, the visual, performative or narrative aspects seem to have an equal or even bigger impact on the experience than the sonic aspects themselves.

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Absences

**Public Art Interventions in Natural
Spaces using Autonomous
Electronic Devices**

Over the past two years, I have developed several autonomous devices meant to act within natural spaces as part of the electronic art intervention project *Absences*. This paper gives an overview of the challenges brought by this project. It gives actual and potential solutions as well as lessons learned through the research-creation process and opens up to the importance of *adaptivity* in future work.

Acting within nature

Electronic and natural systems have inherent differences. It is thus not surprising that introducing artificial autonomous devices in a naturally stabilized ecosystem is not as simple as it looks.

The first challenge of artistic electronic intervention in nature is the mere “survival” of the device. Weather conditions such as extreme temperature, humidity and sunlight can harm components. In the context of using solar cells, such as was the case for all interventions so far, other factors need to be considered. Snow, dust and falling leaves can block the cells, while the shortening of days during Winter and the presence of clouds will reduce energy supplies.

The mere fact that the device is able to maintain its integrity doesn’t guarantee that it can do anything aesthetically interesting. The second important challenge is: How can it interact within its environment in a meaningful way? This raises questions about sensors, data analysis and actuators. First, it is important to have sensors that give simple, yet meaningful information about what needs to be measured. For instance, if we attempt to record frogs, using a microphone with the right spectrum range is mandatory.



Fig. 1: Fourth Absence. Autonomous electronic hibernating object. Sofian Audry, Dawson City, Yukon, Canada, 2009. Photo: Picture by the artist.

But having the right tools doesn't guarantee you can do the job: it's all about the way you handle it. My experience with the outdoor has shown that the main difficulty in getting significant data is that natural environments change quickly, in ways that are often hard to measure. As an example, I had a problem with a device that detected sunsets using heat and light sensors. I adjusted the thresholds in December by trials and errors. By February, the system wasn't detecting sunsets anymore because the conditions of enlightenment and temperature had changed. Robust methods of processing and analyzing data are thus crucial.

Finally, the choice of actuators (motors, speakers, etc) and their behavior is equally important if one wishes to induce a reaction in natural phenomena. This aspect is still largely unexplored and will require more observations and adjustments in real-life situations.

Energy management: an example of autonomous behavior

Energy management is a concrete example of acting within nature and a recurring issue in the project. I will here focus on a kind of device that have insufficient access to resources and thus needs to alternate between periods of activity and dormancy, such as is the case for most real-life organisms. How can such a device reach its specific goals in balance with the available energy resources?

A solution to that problem was developed during my stay near the Arctic (Yukon, 2009). I built a device that produced a sound at a specific pace.

Between each sound emission, it would switch to a sleep mode, consuming almost zero power. The massive changes in day length in the region throughout the year requires it to adapt its frequency accordingly. The right frequency cannot be computed analytically since it depends on many unknown factors (such as the temperature and the precision of the sensors).

I addressed this issue by relying on a very simple *adaptive algorithm* that updates the frequency of appearance of the action (in this case, emitting the sound) based on the measured batteries power (voltage). If too much power is available, the frequency is slightly increased, rising the energy consumption. If there is not enough, it is reduced in a similar fashion.

Simulations have shown that this allows the device to properly adjust its “biorythm” throughout the year. It also seems robust to daily variations. However, the device was difficult to monitor since I had to leave after its installation and it apparently did not survive Winter (although this might be related to environmental factors such as extreme cold). I thus yet have to produce and monitor a real-life example at this point.

Conclusion

Electronic art intervention in natural sites offers many challenges that range from keeping the devices alive to getting them to interact meaningfully with their surrounding. An important issue is that of power management which can be addressed by adapting the activity of the device to its available resources. More research needs to be carried in order to introduce adaptivity into other perceptual and behavioral components of the devices.

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Machines as Gardens: Visual Culture and Post-Steel Sensibilities in the Ruhr District

The visual culture that defined the industrial era Ruhr District has in recent decades given way to a post-steel visual culture that represents a new resolution to the tension between nature and technology through cultivation of what I term landscape value based on an extension of Alois Riegl's work on monuments (Riegl, 1928). From 1989 to 1999, the *International Building Exhibition, Emscher Park (IBA)* became a catalyst for discursive and material changes integral to new images and relations in the Ruhr District. During the decade long tenure of IBA Emscher Park, coal mining and steel production brownfields became important sites for understanding how the post-industrial order materialized in the Ruhr District. Astonishingly, decaying industrial structures were rededicated as architectural and technological masterpieces, and 'weeds' were designated as natural growth worthy of protection.

The IBA years reveal an idea of nature and culture in urban space that is a distinct departure from that of modern industrialization. Since the late 19th century, the Ruhr District had been equated with industry, not "nature." The subordination of all forms of nature to the demands of industrial production had a tremendous impact on the environment – from thick sunlight-filtering smogs to sudden swamps that drowned stands of trees. Emblematic of this relationship to nature is the Emscher River. Once considered picturesque, the meandering river was straightened and canalized to form an open sewer system for the northern Ruhr District. While this was a welcomed improvement in sanitation for humans, the reengineered waterway became too toxic to sustain fish or other forms of wildlife. Incorporating the name of the

Emscher into the title of the building exhibition is indicative of the magnitude of change.

The question then that interests me is: How was it possible to so thoroughly alter the modern industrial relationship between nature and culture in the post-steel Ruhr District? How could their separation be replaced by what I will define as landscape value on some of the most polluted sites with some of the most mundane buildings in the region? The answer is: such a social transformation happened because new forms of visual representation and sensory reevaluations of the tangible landscape took root. By repositioning subjects, enabling middle-class cultural practices and challenging industrial iconic images, alterations to the landscape and attendant alternative ways of viewing and representing it were as much interventions that questioned existing interpretations, as they were the result of reluctantly abandoning the dominance of heavy industrial production.

Landscape culture offers a privileged site from which to observe the intersection of elites and the general public and to understand how both contribute to the invention of new cultural forms. In this case, discursive strategies and material practices drove the innovative process forward. Conflicts between economic and symbolic value were discursively worked out through the politics of the public realm. Material strategies developed through the practices of re-constructing the landscape were also critically important to the whole process. As recent work in art history and science studies has shown, ways of representing, designing and experiencing material culture reveal things about subjects' relations to the world that words alone cannot (Mukerji, 1997; van Alphen, 2005). The Ruhr District as a case study reveals how existing visual and material strategies can be recycled to produce new meanings and practices. Forms of non-discursive thinking like the creation of a system of landmark art, panoramic viewing and collections of colored photographs significantly contributed to a post-steel sensory system in which machines are gardens.

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P 51

Archive/Preservation II

■ **Anne Laforet (fr):**
Net Art and Preservation. For Museums and Artists

■ **Gabriella Giannachi, Duncan Rowland, Steve Benford (gb):**
Digital Waste or a Valuable Resource? Exploring the
Aesthetics, Ethics and Value of Contextual Footprints

Net Art and Preservation. For Museums and Artists

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Artists have appropriated the Internet as soon as it became public to experiment new artistic, social and technical practices that have been gathered under the term net art. The museums and cultural institutions that are interested by those works have to reconsider the way they commission, exhibit, collect and preserve artworks, as they already did with other forms of ephemeral or process-based art. They have to construct new approaches to preservation that would also make them rethink how to conserve and display their entire collections, not just digital works. Very few museums have actually acquired online artworks, despite the interest that many showed towards these practices, especially in the late 1990s and early 2000s. Paradoxically, museums have never been so ready to do so as many studies and research programs, often collaborations between institutions, have been dedicated to the preservation of new media art (mostly video artworks and rarely digital art pieces).

Net art works, along with other forms of art, whether digital or not, are challenging some of the elements that are central to artworks within a museum collection. They are inherently variable and in a state of programmed obsolescence. Nevertheless, new or updated preservation models within museums can be explored in order to preserve the net art pieces, that is to preserve its accessibility. I use accessibility as a notion that includes both access and exhibition: the artwork is online and ready to be activated by an Internet user, and there are elements of context and documentation. Accessibility guides preservation strategies, even if it's independent from them.

Which elements of net art works should be emphasized, described, documented and kept? What makes up the artwork: the experience of the piece for the visitor, what can be seen on the screen, its apparatus, its source code, etc.? Preservation strategies and subsequent collections will vary, depending on the way institutions answer that question. Within the museum context has emerged the Variable Media Initiative which perceives the artwork outside of its medium, so that it can evolve, be re-created, for instance when its original medium becomes obsolete. Every art work is considered

individually, more as a score than a finite, unchanging object. This model is highly influential within the scope of new media and process-based artworks, even if it has been implemented by only a few institutions.

I would like to suggest another way to look at the preservation of net art with an intuition and potential solution: the archeological museum model. An archeological museum preserves broken pieces, equivalent of works that don't function anymore as they should, accumulates objects in various states which allow for a mental reconstruction of the original ones. The status of what is shown is significantly different in such a museum: visitors are aware that what they are seeing and experiencing is reconstructed, they do not expect to see an object that is identical to what it was when it was made. The status of the artwork recreated is challenged and interrogated.

By combining museum and archival approaches, it is possible to keep traces of the net-based artworks' context by taking into account interrelations within a dynamic environment. Net archiving tools allow to follow very closely how an art work evolves, but that doesn't necessarily mean that the capture of works are functioning similarly to the works themselves.

By emphasizing the dialog between net art works and their environment, the institution would become a living archive, with fragments of artworks which could be updated and re-activated in multiple ways in such a "data museum."

The challenges the museum faces with preservation of net art works are also shared by artists, albeit in different ways. The difficulty to assess the lifetime of online artworks change the ways artists think about their own works. One option could be for artists to document their artworks while they are creating and showing them, as a rich documentation (both artistic and technical) could also have a career beside the artwork, especially as in some cases it's the only way to have access to the work. One other possibility, compatible with the first option, is the use of free software, open formats and copyleft licenses as they allow artists to make the life duration of their works potentially longer, whatever the way their works is distributed. Beside the advantages of free software for the creation of artworks (such as the freedom to experiment, the independence from companies and sharing of code and knowledge, etc), the use of open standards and formats for once give artists a little more time to show, share and sell their works than if they would use proprietary formats, as open standards make interoperability possible between software. Copyleft licences also permits, and encourages, duplication, which ensures its access, which is a main factor of its longevity. The care of the work could be potentially distributed outside of a single artist or institution. Nevertheless, digital artworks, whether made with proprietary or free softwares suffer from the same issues with storage and software decay.

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Digital Waste or a Valuable Resource?

Exploring the Aesthetics, Ethics
and Value of Contextual Footprints

This paper introduces the early stages of the research conducted by the recently awarded Horizon project (RCUK 2009-14), in which an interdisciplinary team comprising staff from Computer Science, Psychology, Sociology, Business, the Arts and Humanities collaborate with over 36 industrial partners to research and develop new ways to use the electronic 'footprints' we leave behind whenever we utilise mobile, internet and other digital technologies.

We focus specifically on one of Horizon's projects, 'The Documentation and Archiving of Pervasive Experiences: The case of Rider Spoke' (2010), which aimed at creating a new tool called 'CloudPad' for the annotation of time-based media.

Developed in collaboration with British Libraries, Stanford Libraries, the San Francisco Art Institute and the UK based art company Blast Theory, the CloudPad constitutes a tool for creating media-mashups from digital archives. The aim was to provide a customisable web-based platform that would allow the synchronised playback of cloud-based media entities (e.g. YouTube videos, audio files) together with layers of user annotations. The design was deliberately simple, and sought to make the process of synchronising and annotating multiple media streams as straightforward as possible. Media items (video, images, audio and textboxes) were added to the CloudPad page (via URL) together with 'on/off' time-stamps, with each item only appearing on the page between these two markers. The 'current time' could be changed by 'playing the page' or scrubbed backwards and forwards using the timeline at the bottom of the page. Alternatively, one of the visible media

items could be used as a 'master clock' so that when played, all other items would be synchronised to it. Text boxes were built to be 'temporally aware' so that they could appear and disappear along with the other media items. Similarly, edits to text were stored and time-stamped so that they could be re-performed during playback (c.f. Google Wave). Each media type (video, image, audio and text) was encapsulated to provide a standard interface to JavaScript. This was to allow the media type to be 'on/off' (currently visible on the page or not), to be re-positioned and scaled and to act appropriately on time-change events (including user controlled changes to its own time), and to generate such events during playback. The platform was implemented so that it would be straightforward to add further media types (for example a Google Earth or Graph window) by encapsulating and conforming the new type to the JavaScript interface. The look of the page was specified using cascading style-sheets allowing simple re-purposing of the platform.

Content-wise, the prototype archive was built around a documentation of Blast Theory's Rider Spoke when it occurred in Linz (Austria) during the *ars electronica* festival (2009). Rider Spoke is a location-based game for cyclists developed by Blast Theory in collaboration with Mixed Reality Laboratory as part of the European research project IPerG. The work encouraged participants to cycle around a city in order to record personal memories and make statements about their past, present and future that were associated with particular locations in the city. Rider Spoke, which has so far been experienced by over 2000 participants and has toured in the UK, Europe, South America and Australia, also allowed participants to find and listen to the responses of preceding players. These were built over time, as each day's recordings were loaded into the system overnight to appear in the performance the following day.

A range of equipment was utilised to make the recordings of the participants' experience. The riders' location was recorded using a GPS device. In-game audio was recorded along with the participants' responses and any environmental sounds. Videos were also taken of the riders from two key vantage points (a 'chase cam' followed the bike, creating a third person perspective, and an upwardly mounted 'face cam' mounted on the handlebars of the participant's bike creating a first person perspective). Two devices were used to record the position of the participant riders. An N95 phone from Nokia has an inbuilt GPS device and recordings were made with the Sport-sTracker software. The device i-gotU is designed to retrofit GPS positioning onto cameras so images can be geo-referenced at some time after they have been taken (a user presses a button on the i-gotU device around the same time an image is taken and the times used to co-reference the location image was taken from).

The Rider Spoke CloudPad Archive not only offers an insight into Rider Spoke itself, with interviews to participants, Blast Theory and technologists from the Mixed Reality Laboratory, whilst linking to external materials, such as articles, videos, photos and GPS maps created by Blast Theory and the Mixed Reality Lab, but also allows insight into how a number of users

navigated and annotated these materials, thus making it possible not only to study the 'original' Rider Spoke event but also to look into how it is annotated over time by others.

We conclude this paper by offering an initial examination of how we think the digital footprints generated in engaging with the CloudPad could be harnessed, 'recycled' and accessed to transform the way we document and archive our experiences.

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P52

New Art Theory III

- Inês Albuquerque, Ricardo Torres, Rosa Maria Oliveira (pt):
From Art as Knowledge to the Aesthetics of the Subject.
New Ways of Thinking the Art of the 21st Century

- Michael Brodsky (us):
Big Pixels: Pictoglyph to Favicon – A History of the Pixel

- Yonggeun Kim, Seungae Bang, Joonsung Yoon (kr):
Site-Specific Art as Necrophilia; Platform in Kimusa Exhibition in Seoul 2009

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From Art as Knowledge to the Aesthetics of the Subject

New Ways of Thinking the Art of
the 21st Century

Introduction

The article proposes the development of a new aesthetic approach to contemporary art produced in or for technological platforms, focussing on interactive art and art as knowledge.

Art as knowledge

The work of art is a trustee of subjective, empirical and emotional information, accessible to those available to fit in the role of receiver and interpreter of that information.

Authors such as Claudia Giannetti are working under the perspective of art as knowledge related with new forms of artistic expression rooted in mediatic or technological environments, where the public plays a multiple role: as receiver, as collaborative partner, almost as an artist. Understanding art as knowledge means comprehend the interaction between public and artwork.

Structuration of the subjective

One cannot fully analyse art by simply decontextualizing it (Panofsky, 1983; Bourdieu, 1979). It is necessary to take in consideration properly the micro and macro societal aspects, in a perspective ideally resembling that of Simmel's snapshots, where the ordinary of everyday life is stripped for its given symbolic meaning and relation to the broader symbolic articulations of society.

As today's society goes through globalizing processes with its cultural fluxes (Appadurai, 1991: 295-310) and traditional symbolic structures have lost their importance in the orientation of action and experience (Beck et al, 2000: 53), experience and reality become an individual construction, a work of every individual. This can be traced to Kantian philosophy and Goethe's camera obscura experiment, which underlined the importance of the subject in the experience. The relevant part of the experience ceased to be its structure or its symbolic perception in favour of the individual and his own reflexive interpretation.

The art system (Melo, 1994: 11-31) stayed on the path initiated since the institutionalization of anomie (Bourdieu, 1993: 238-253), leading to the definition of art as something not dictated by institutionalized dictates, but by symbolic legitimation originated from different social groups. Thus, contemporary society helps in shaping art experience as a subjective experience, both in terms of individuality and in terms of structure. Perhaps the best way to describe the act of experiencing the new art forms lays in the literary figure popularized by Baudelaire, the *flâneur*. Maybe, as the *flâneur* walked the city in order to experience it, the contemporary actor must subjectively experience contemporary art in order to travel through it.

Interactive art and a new paradigm to the observer

Interactive art places the observer in a different situation from that in "traditional art," as he can establish a relation with the work of art. Because the observer faces a new situation, we can consider that the observer no longer exists. He is a dynamic, collaborative and active participant (subject) in the creative and aesthetical process of contemporary art.

Modern and contemporary art framed in the relation between art, science and technology, under the goal of immersion and participation, include art forms such as installation, video, web art, virtual reality and ambient music (Paul, 2008).

Aesthetics of the subject: a new aesthetical approach?

In the context of contemporary art, authors seek to develop aesthetic approaches adapted to the reality of the relation between art and technology. However, this demand is not a result of the 21st century, since the last century was prolific in new ideas regarding art and technology: from Informational Aesthetics of Max Bense and A. Moles in the 60s, to Systemic Aesthetics in the 90s, appropriated from Endophysics theories by Peter Weibel. This theory, applied to interactivity and virtual reality in art, in which the observer (or subject) and the interface were the most important aspects, influenced Claudia Giannetti in developing Endoaesthetics.

Thinking the individual as the centre of the aesthetical process leads to the idea of the aesthetics of the subject. The key concept of this idea is the subject: when the observer became a participating element, almost a co-author of the interactive work, he becomes the centre of the aesthetic question, a

subject with a key role for understanding the artwork. His relationship and interaction with the work are the main ideas of this hypothesis.

Conclusions

This article presents a new aesthetic possibility, which is believed to make sense in the context of contemporary art.

Society is changing. The structuring of how an individual perceives reality is changing as society gradually becomes different. And to monitor the development of new forms of art, it is also absolutely necessary to develop new ways of thinking that will confirm the opening of different paths in the art of the 21st century.

Acknowledgment

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**Big Pixels:
Pictograph to Favicon –
A History of the Pixel**

The Pixel has become the fundamental building block of digital New Media. It looms as large as Kazimir Malevich's Black Square, 1913, Oil on Canvas Painting and it as expansive as Ray and Charles Eames' Powers of Ten, 1968 film. The Pixel has become so ubiquitous that the very nature of visual language seems to exist on a near cellular level where it syntactically requires ever-increasing density to transmit detail and nuance.

Yet in the Pixel's ever decreasing size along with a corresponding increase in density, it can never achieve the reality that we need, so we continue, as in ancient times, to define ourselves through abstractions, symbols and icons which require less, not more data, to represent people as pictorial forms and to create pictorial forms from people. [Fig. 1]



Fig. 1: Petroglyphs Aqua Fria National Monument, Arizona. 2002 Photo: Hazopelli

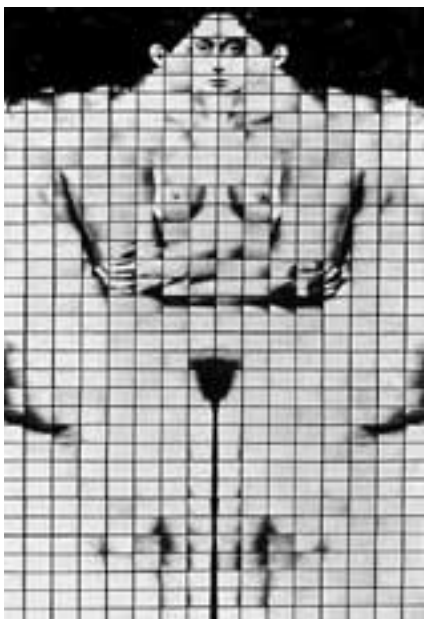


Fig. 2: Susan, Photograph. 1971 Photo: Tetsu Okuhara

The term pixel was first used in publication by Frederic C. Billingsley in 1965. It derives its name from Picture and Element and at its most elemental it is a building block, in between which is the mortar of our imagination. It is the space between the Pixels where synaptic connections are made and where our mind decodes meanings and makes meanings of the message. [Fig. 2]

There has been an extended history of artists that have been enamored with the breaking down of elemental forms, long before the advent of the computer. But with the advent of digital technology, graphical depictions had to be built back up on a new platform that was initially crude, less tactile and less connected than previously known media. Yet in the 45 years since the term Pixel came into being, a whole generation that grew up with EGA and VGA graphics came to understand and appreciate their own ability to be interactive with digital media. They envisioned themselves as Buddy Icons, Forum Avatars and Pixel Art. They saw themselves as Pixels.

Yet what happens when humans gather together publicly acting as living Pixels and are reduced to picture elements in mass political demonstrations and mass games? Is it to express their unified strength and power as a rehearsal for revolutionary change? Or is it to find a place in the mass of human structure? [Fig. 3]

One of the largest Pixel representations was the exhibition of the AIDS Memorial Quilt, as part of the annual World AIDS Day held in 1992 on the National Mall in Washington D.C. Each panel that comprises the AIDS Memorial Quilt measures about 3 feet by 6 feet about the size of a human cemetery plot. Each individual quilt is then stitched together to form a block.



Fig. 3: Palm Pre television commercial by Modernista! Boston, 2009 Photo: Palm, Inc.



Fig. 4: National Mall, Washington, DC, 1992 Photo: Courtesy The NAMES Project Foundation, Photograph by Mark Theissen

Just as basic Pixels are grouped together to creative graphic elements. The grouping of the individual quilts speaks to the larger meaning of a community lost to AIDS. The fact that the individual quilts are crafted by hand speaks to the larger community of those touched by this disease. [Fig. 4]

The AIDS Memorial Quilt as exhibited, weighed 54 tons and was comprised of more than 48,000 individual panels dedicated to 90,000 people and serves as the documentation to those who have lost their lives to this pandemic. The documentation in the form of the AIDS Memorial Quilt continues to grown in size is raising issues in storage and long term preservation much in the same way that digital media must be stored awaiting a proper reading and decoding from their binary state.

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Site-Specific Art as Necrophilia; Platform in Kimusa Exhibition in Seoul 2009

Introduction

In site-specific art, irrelevant to any kind of contention, the instinctual characters, Thanatos and Eros are obliged to be rendered. Eros, as a compulsion to repeat, inhibits onto the locus. Thanatos, as a compulsion "that aims at a state of things which has never yet been attained" (Freud 1973; 38), destructs the site. And this ambivalence has the biased inclination by the dominance of one side. What decides this inclination is not a static force which is owned by each side but the transformation of the "neutral energy." (Freud 1961; 44) And the character of site-specific art totally depends on this imbalanced duality.

Kimusa and Exhibition

Kimusa is the Korean acronym of Defense Security Command, which was founded as "Army Counter-intelligence Corps" during the Korean War. Due to the ideological antagonism in Korean peninsula and the long-lasting military dictatorship from 60s to 80s, Kimusa influenced the decisive political moments in an anti-democratic way by the execution of public power. (Savada 1997; 316-317) In 1974, as Kimusa moved to Sogyeok-dong, the central area of Seoul, Kimusa could be confirmed itself as the synonym for the confidential and brutal state power through the military dictatorship until late 1980's. Until they moved to the suburban area, Gwachon city in 2008, Kimusa was forbidden to the public. After 2008 it finally became public by the government plan which will convert it into the National Museum of Contemporary Art



Fig. 1: Kimusa in 2010

by 2012. However, the controversy is still in advance whether the museum should be under the management of the government or the place where the independent curators can organize the exhibitions without any external interference. And without any affirmed future for Kimusa, as the 4th of the series of five international contemporary art festivals in Seoul, Platform 2009 exhibited various artworks in Kimusa.

The Dead Place

Kimusa is a disembowelled shell and not a place where Eros and Thanatos are able to find their object. First, there is nothing to be retained by Eros. The compulsion for self-preservation and self-repetition is unable to find the pleasantness to be continued. Also there is nothing to be destructed by Thanatos. Without the old occupants, Kimusa is just an empty shell that is never able to give the pleasant of mastery as the demolition of Kimusa cannot be equal to the destruction of the old occupants' dominance or to the death sentence for the anti-democratic power. These frustrating situations make Kimusa the dead place for the dual compulsions.

The Necrophilia

As a specific site for artistic practices, Kimusa results the slippery interweaving of Eros and Thanatos, the necrophilia. Empty Kimusa, the fossilized shell of decayed military dictatorship have reminded the people of the cruel history of the civil movement for democracy. Additionally, the broadened gap between the ideal state power and the dissatisfaction of the contemporary political situation is deeply related to the gaze of Kimusa after its temporal decline. And this gap brings the imbalance of the dual compulsion by

transferring the displaceable neutral energy onto one side. In the case of the dead Kimusa, what overwhelms is Thanatos.

Eros chooses the site. It is undeniable to say that the site-specific art will cite the history of the selected place. This citation is the evidence of how the artistic will or the curatorial intention were interested in the site. Moreover, the historic memoir of Kimusa amplifies this interest into love and hate. Though the hatred is originated from the painful past, it is unavoidable that the choice of Kimusa reflects the Eros of the residents whirring around there and of the site where the residents keep living. At this point, we see the overlapping of the corrupt state power that produced the Kimusa and the hope for the ideal state power which is yet to come.

On the contrary, Thanatos affirms the future of the chosen site. The desire for the ideal state power in a democratic society always premises the denial of the present. Though the people's critical mind affirms the future for a better nation, to produce the progressive critique, the people want to judge the present in the name of Thanatos, the death sentence for the anti-democracy. For South Korean, Kimusa is the place where they recall the negations of the past. But as far as they adopted it as their own, the negatable part of Kimusa is not its past or present but its worst future, the repetition of the past.

However, the union of Eros and Thanatos is always elusive and disproportionate, like necrophilia never enables the pregnancy. What is visible inside the empty Kimusa are the traces of victims frustrated by the corrupt state power. The invisible what South Korean want to render by the site-specific art in Kimusa is the ideal state power. However, the real state power conceals itself by allowing an individual to project the illusion of the ideal state power on the empty Kimusa. Instead the state power hides itself behind the illusion of the ideal state power by disemboweling Kimusa.

Eventually, what Thanatos and Eros see from each other is just an illusion. That is why they are fascinated by each other and also they are slippery. Thus, the necrophilia only renders the mirrored image of each other that is fabricated by the invisible power.

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P 53

Algorithmic Topology

- Eugenia Fratzeskou (gb):
Unfolding Space

- Gabriel Menotti (gb):
Computation as Dynamic Topography: The Coordination of
Algorithms, Apparatus and Architectures in the Production
of Digital Images

- Martin Koplin, Carl Skelton, Helmut Eirund, Thorsten Teschke (de):
Betaville

- Lone Koefoed Hansen (dk):
Practicing the Generic (City). Reconfiguring Life through
Digital Media

Unfolding Space

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New concepts of space and strategies for spatial research and practice across disciplines have been inspired by our changing understanding of reality. Essentially, information technology, Einstein's theory of relativity and quantum physics have brought radical changes in cosmology, science, art, design and philosophy, as they have altered our understanding of space and our experience of it. Such a radical turning point in contemporary thought, has attracted the interest of numerous thinkers and artists like Lev Manovich, who, as the educator and critic Monika Bakke describes, defines this change as the shift from Modernism to "informationalism" (Bakke 2006, 11, 14-15). The focal point is neither objects nor forms, but various 'information flows'. Space is now defined as a constantly and uncontrollably changing 'informational substance' in which various kinds of polymorphous relativistic spaces emerge. Such a shift necessitates new spatial research strategies for advancing contemporary site-specific art and architecture.

The boundary has been the fundamental aspect of architecture. As Steven Connor explains, architecture can be essentially conceived as a "confrontation and exchange" between the "spatiofugal" and "spatiopetal" orders of space (Connor 2004, 121-122). As space itself is neither uniform nor inert, the conventional boundaries of built architecture are radically challenged. In addition to the quantum paradigm shift in science, non-Euclidean geometry has increased contemporary artists' and architects' interest in visualising and creatively engaging with the invisible and unknown co-ordinates of reality and perception through revealing various fields of interaction between the environment, matter, technology and users, challenging thus, our conventional notions of space and built architecture as well as the functionality and morphology of the latter.

The developments that have been discussed above, necessitate a creative in-depth and inventive investigation of the relationship between digital and physical spaces for advancing digital site-specific art. In particular, new methodologies are needed for creatively revealing the paradox of the informational space of Virtual Reality due to which, the digital boundaries

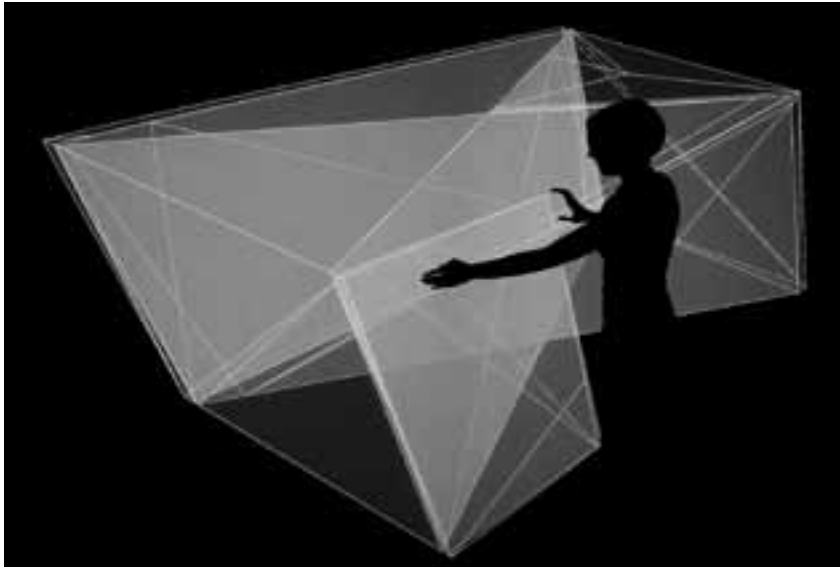


Fig. 1: Stereoscopically projected 3D digital model in the room-sized virtual environment Photo: Artwork & photograph by Eugenia Fratzeskou, all rights reserved

of architecture are not only abstract and fuzzy but also, highly flawed and unstable. This is achieved in my work through the visualisation of inter-spatiality between the physical and digital spaces of architecture, as opposed to creating interfaces and complying with the conventional modes of using digital visualisation and virtual environments in art, architecture, design and science.

Through the in-depth practical and theoretical investigation of digital visualisation systems, which has included their philosophical and mathematical foundations, it has been possible to develop new types of site-specific drawing within semi-immersive room-sized virtual environments. Although Boolean Algebra has enabled the creation of computer algorithms and volume-based digital modelling, the 'ghost' of Boolean inconsistencies remains in the algorithmic orders and its full expanse has yet to be creatively explored. The emphasis is placed on analytically visualising how the inter-passages between the actual and virtual boundaries of architectural space can be gradually revealed through the stereoscopically projected digital modelling of the built space within the virtual environment by using Boolean Set Operations [Fig. 1].

The conventional modes of digital visualisation, site-specificity, virtual and mixed realities in art, design and science are radically challenged, as the built boundaries of architecture are 'unfolded' to reveal a paradoxical hybrid space within the virtual environment. The digital boundaries of architecture are revealed to be highly inconsistent, undermining the solidity, stability, continuity of the built space and our perception of it. Such irregularity exposes not only the inherent abstraction but also, the flaws that occur in the

interchanges between the binary, numerical and graphical levels of digital visualisation systems.

A new paradoxical kind of spatiality (inter-spatiality) emerges through visualising not only the processes but also, the inconsistencies of volume definition, layering, geometry and boundary generation that characterise computer 3D modelling. Various unknown and ambiguous types of space appear as we pass through various spatial orders and geometrical paradoxes. The hidden dimensions of architectural space that remain unregulated, elusive and unbuilt are revealed. The manifestation of inter-spatiality enables a new philosophical understanding, experience, and perception of space that inspires new types of spatial research and practice in art, architecture and the related disciplines.

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Computation as Dynamic Topography:

The Coordination of Algorithms,
Apparatus and Architectures in the
Production of Digital Images

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The tradition that assimilates computer code to text is not completely appropriate for the analysis of audiovisual works based on digital media. It forces theory to take a detour through the field of linguistics, hiding the fact that – as physical phenomena – computation has more to do with architecture than with writing. This paper proposes the spatial *dispositif* as a concurrent paradigm for the evaluation of computational processes in the production of technical images. That, computational algorithms would share fundamental qualities with the cinematographic apparatus and the installation of art in a gallery.

The similarities between computation and the organization of objects can be traced back to the pre-historic origins of calculus. Men first kept track of quantities using proxies such as their fingers (*digits*) or small stones (*calculus*). This sort of calculation had no abstract dimension and it did not produce a directly 'readable' outcome: the herdsman separated one pebble for each head of cattle that entered the cowshed; the ensuing pile of rocks did not represent a numerical value, but it could be used as a comparative mechanism to find if any animal was missing. Thus, both to count and to understand its results depended on the same activity of *processing discrete objects in closed territories*.

The physical computer gains abstract complexity and operability. These discrete entities are arranged according to rules of occupation, which pre-process the results of calculus. The chief example of this principle is the abacus, a matrix that organizes the pebbles in a system of relative, fixed positions. This striation of computational space produces a smooth visual pattern (Deleuze & Guattari 2004), where complex values can be immediately apprehended and go through sophisticated manipulations. Similarly, one

could assume that the grid of coloured pixels in a modern computer screen is a particular surface of the machine's digital geometry, even before being any form of *representation*.

It is important to remark that the formalization of the aforementioned abstractions is visual being *conceptual*. In that sense, we'd argue that the parameters of computation are more like *rules of composition*, a strict textual grammar. One can easily perceive this operational logic in rudimentary programmable computers. For instance, Charles Babbage's mythical *analytical engine* (1837) borrowed its method of data storage and input (punch-hole cards) from the *Jacquard loom*, a device used to produce intricate visual patterns (Null & Lobur, 16). The processing method of the likewise theoretical *universal Turing machine* (1937) basically consisted of moving through the uni-dimensional space of an infinite tape and managing its binary occupation (Hayles, 176).

With electronics, the parameters of spatial arrangement become incorporated in the machine's circuit, as the once discrete entities are substituted by the constant flow of electricity. Modern-day CPUs function no differently from the first electronic computer, built 1939 using *relays* – switches that direct the electric current in one way or another (Kittler 1999, 18). Electronics take the spatial logic of computation to its last extents, as it reduces both data and its operation to the flow of energy (Kittler, 1995). In such mechanism, even the most static information depends on the system's overall motion (Kirschenbaum, 95). Hence, Bolter states that "all data in the computer world is a kind of controlled movement" (Ibid, 41) – the *trajectories* that stand as the necessary negative of the computer's dynamic topography. In other words, computation only exists while the system *runs*. It is not something the computer *does*; it is the manifested computer. Computation, all of the machine's logical and physical layers are reduced to the continuum of energy that enters through the power plug, goes through the processor and lights up the screen.

Likewise, software is never running in a computer; software is the computer running *in a particular way*, resulting in surface effects (Kittler 1999, 1). This also means that the algorithm is one of the computer's forms, impossible to tell apart from the machine's operation. Although the machine does *interpret* the code, it is not as a *reader* as much as a *performer*. Computation is not carried out in any language; even the machine's lowest ones and zeros are no more than "shorthand conveniences for voltage differentials" (Kirschenbaum, 116) – i.e. *another surface effect*. Programming languages mainly exist to bridge the gap between human use and computer operation. While low-level paradigms such as assembly still retain traces of spatial logic, high-level ones attain "superior flexibility and ease of design" by adopting natural semantics and syntax (Hayles, 58). Collaterally, they drive programming away from computation, as a "metaphor that hides the machine from its users" (Kittler, 1985).

We finish this essay by referring to modes of data input and programming through spatial arrangement, especially the *dataflow* paradigm employed in

systems such as *Pure Data* and *Max/MSP*. Based on the modular construction of electronic music synthesisers, these software call attention to the signal processing that happens on the core of the digital computer. As they become increasingly popular in the digital art scene, one hopes they inspire a critical framework more attentive to the qualities of algorithms as dispositives.

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The Vision of Betaville – The new urban sculpture

Our vision of the new urbanity is the smart city, a city where you wish to live in, a city of art, a city designed by its inhabitants, for their dreams and their daily life. Betaville is a tool for the next step in such a mass participatory urban design and development reality.

We have been inspired by connecting the idea of participatory design with social dynamics using the web, offering a mass player infrastructure for cultural expressions of live, architecture, city-textures, urban art, live-style, from group-design to ecological living.

Our goal is to offer a mobile-stationary AR environment for smart cities – or such where citizens would like to change it into one. The Betaville system allows the participation of citizens and local groups in the local urban development from a very early stage on. We develop different types of interactivity and access, that accumulates the engagement of users to an new sort of urban sculpture.

Alternative planning proposals will be transparently available. As a continuous test and art place – as a new function of a “sustainable” Web. In cooperation with artists, developers and researchers from Europe, North America and Asia, Betaville tries to realize this vision: a hybrid open source environment where everybody can follow – even change – the ideas concerning urban development, urban art, or a decentralized infrastructure.



A Scenario in Betaville – Participation in different environments

In Alphaville, a fictitious city, an old factory has been torn down. The vacant area is to be revived in the near future and the city hall constitutes an official planning board. In order to take into consideration its citizens' demands for a livable city as well as potential interests of authorities and technical restrictions, the public administration is interested in the active participation of other parties in the decision and development process. Therefore, Betaville could be used. It configures the real estate in the virtual system.

Bob likes to actively take part in the planning process about his vicinity. As he is interested in a mixed use of the area, he uses the functionality to incorporate 3D models of a town house as well as a small shopping mall with space for different shops. Alice gets to see Bob's proposal on Betaville and adds a kindergarten that she finds essential for a vivid quarter. After releasing her ideas in Betaville, her friend Carol also wants to participate in the redevelopment of the area. Equipped with her mobile device, Carol inspects the area and uses Betaville's mobile client for 3D on-site-visualizations of the different planning proposals on her mobile screen. With these authentic impressions in mind she realizes the long distance from the housing area to the kindergarten and changes the proposal directly on her mobile by positioning the kindergarten closer to the housing area. Back at home she realizes a lack of green space and substitutes the shopping mall in Bob's design by a small park.

Members of the community, local authorities, or even potential investors now have the chance to refine and extend the development branches created by Bob, Alice, and Carol, to rearrange the proposals or even to create new branches. Furthermore, every member of the community has the chance to participate in online discussions about the published ideas, to comment or just to vote for or against it – at home on the web or mobile at the very site. At multi-touch tables small groups can meet and collaborate in real life, discuss alternative proposals, create and manipulate new ideas and visualize.

Betaville – First in New York

The first implementation of Betaville is planned for Battery Park, the open green space at the tip of Manhattan opposite the statue of Liberty: intensively used, contested by a bewildering assortment of stakeholders.

First level: aggregation and sunshine— by providing for embedded links to various agents, documents, and proposals already in place, the online world makes it possible for anyone wishing to seriously address this oddly contested and liminal environment with a full and interactive picture of the situation. Second level: a visualization environment in which it is possible for an artist, a citizen, or in fact anyone with internet access anywhere in the world to make sense of the web of functional and qualitative constraints and possibilities for place-making in context.

Third level: playing in an environment that will really support ongoing ad-hoc local discussion of possibilities for change, from something as concrete and immediate as the siting of a new work of sculpture to more complex long-term deliberations.

Fourth level: collaborative deliberation and creation. Each proposal will be accessible through a link embedded in the master model, and will carry its own discussion threads and version history. Anyone with a idea they think is worth considering/developing can initiate this process by uploading a model, in the spirit of the open-source protocol of a “request for comment”

A real city is in perpetual “beta”: unfinished, and in need of direct engagement by the broadest possible coalition of stakeholders. Betaville provides a new kind of “magic circle”: the radical plasticity of any urban environment is now a creative opportunity, rather than a constant threat, to individuals and local communities – a higher form of collaborative creative play in a game with real stakes.

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Practicing the Generic (City) Reconfiguring Life through Digital Media

The key issue to examine with locative media and pervasive games is that many of these new, mediated experiences refer to and appropriate space while divorcing it from its meaning, history, and significance.
(Flanagan 2007; 5)

All Generic Cities issue from the tabula rasa; if there was nothing, now they are there; if there was something, they have replaced it. They must, otherwise they would be historic.
(Koolhaas 1995; 1253)

Discussing locative media projects Flanagan (2007) argues that digital urban games often demonstrate a striking lack of reflection on the particular urban space they are designed for. Many claim to be psychogeographic, but hardly any of them actually are, Flanagan argues, as they neglect the historical and political aspects that were essential to the Situationists' investigations. With the Situationists and Lefebvre as analytical tool, she thus presents a critique of those games where the game 'engine' and not the context itself defines the game play. Concluding that most games understand the urban landscape simply as an advanced game board where the actual location is only superficially explored, Flanagan calls for designers to understand that locative media projects "must begin to reflect the contested nature of the lived reality of such spaces" (Flanagan 2007; 9).

Cities of 'character'?

But what kind of spaces are we talking about? We could understand these locations in light of the cities (primarily Paris) that the Situationists worked

with: large, 'traditional' European cities imbued with many layers of history. However, if we follow Dutch architect Rem Koolhaas, those cities have 'disappeared', partly through the attempts of conserving them. In his monumental book "S, M, L, XL" Koolhaas introduced the idea of the Generic City describing how every modern metropolis is essentially a slightly reconfigured clone of any other urban area. He finds the search for historic identity meaningless as the "perpetual quest for 'character,' grinds successful identities down to meaningless dust" (Koolhaas 1995; 1248). What most would bemoan, Koolhaas applauds, because out of this identity stripping rises the generic "an endless repetition of the same simple structural module." (Koolhaas 1995; 1251) Or, to return to Flanagan's vocabulary, out of this rises the city as a game board on which anything can happen.

With respect to locative media, how do we then navigate between the positions laid out by Flanagan and Koolhaas? Can digital media work with both the generic and the particular qualities of a location? Koolhaas' might offer a first step of resolving this himself as Prouty notes that the more you invest, the more particular the generic becomes, even if it is always generic on some level and even if this experience is always transient:

the generic city describes a way of seeing as much as it describes a set of objects [...] Live in one place long enough and subtle but distinct differences start to emerge [...] A generic city is the humid boomtown you visit on business. It's a transient space that can't be fully inhabited. (Prouty 2009; 7)

Inhabiting and reconfiguring generic locations

Through a sketchy analysis of Dutch media artist Esther Polak's *NomadicMILK* (2008), let's look at how locative media can reconfigure (the experience of) a location from generic to particular and vice versa, even if only temporarily. Using GPS equipment and a robot that 'draws' with sand on the ground, *NomadicMILK* visualizes milk transports and herdsmen's migration routes in Nigeria as sand tracks, that show the 'shared workspace' of drivers and herdsmen.

The spatial understanding of herdsmen and truck drivers obviously differs. With Prouty we might say that while the rural landscape is generic to the truck drivers, its particularity causes herdsmen to always adapt their migration patterns. The sand robot's drawing is always scaled to its maximum range (appr. 12 m), resulting in no visual difference between a 3 km and a 3,000 km route, and this clearly plays with the generic and the particular.

Most compelling, though, is the drawing's reflection of the temporality of both the particular and the generic. As a material witness to the temporal, the sand drawing is subject to immediate erasure. Both figuratively and concretely speaking, the sand tracks can never leave a lasting impression on a particular level, although they might leave a generic impression of routes and scales as such. The sand-on-sand representation shows how the generic can be reconfigured through particular acts of movement, but also how these movements have limited capacity for showing or creating lasting

(or historic to use a term from the Situationists' psychogeographic vocabulary) layers of understanding. Using this particular material, Polak's project thus shows that there is no essence, only fractals "endless repetition[s] of the same simple structural module" (Koolhaas 1995; 1251). But also fractals reveal interesting information.

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Keynote

Harald Welzer (de)

Center for Interdisciplinary Memory
Research, Essen
Director

Geo-Crises: From Knowledge to Action

Territoriality is today increasingly less tied to geographic locations, but instead manifests as a multifaceted phenomenon in which national and power-political demands play a similar role as international financial flows, technical infrastructure and mass media attention. And so communications technologies and the mobility of information technically create a new, globally effective territorial order which requires new critical methods and strategies for its used analysis and design.

Currently there is lots of talk about 'crises'. We are however, economically just as ecologically, by no means in a crisis, but we have found ourselves at the limit of a 250 year long, extremely successful system. It is particularly surprising that the knowledge necessary for this diagnosis has been available, in some cases for decades, but that no appropriate action has followed from this knowledge [...]. Radical changes in life styles and options for action do not work with top-down implementation, but must be tested in everyday life and, if found successful, spread until they become part of the cultural mainstream. The future depends on this potential being more attentively taken, promoted and made political.

Keynote

Marko Peljhan (SI)University of California, Santa Barbara
Associate Professor**Logistics and Strategies –
What I Have to Tell You
about Radio and 1995**

The talk by Marko Peljhan explores the tensions between the emancipatory and destructive potentials of technological systems for data aggregation and distribution, radio and related media fields. From the history of the satellite, life in the Arctic, to the realities of a modern battlefield.

The wars on the territory of former Yugoslavia from 1991 to 1999 have transformed multiple landscapes on multiple scales. These range from deeply emotional, personal and psychic, to the technological, techno-political and even strategic fields.

As the wars started in 1991, one of the first visible and tangible consequences was that the skies went silent. Air traffic in one of the more congested air corridors in Europe stopped. No contrails were visible for months, and when they reappeared, they were a consequence of military, UN or other war related traffic. Air traffic control communications all but ceased. But one particular landscape that accelerated in the other direction almost to full saturation was the rest of the electromagnetic spectrum. Telecommunications suddenly became a vital, congested and deadly tool in the hands of the opposing military factions. Electronic media played a vital role in preparing the genocides that followed and in chronicling them as well as saving and destroying lives, separating and uniting families and loved ones, mapping and executing destruction and analyzing it. As a radio-amateur operator, I followed these events with my radio systems on high and very high frequencies from Slovenia, utterly incapacitated to do almost anything and drawing conclusions that haunt me to this very day. Wherever I am. In Srebrenica, Tuzla, Sarajevo, Belgrade, Ljubljana, Santa Barbara or Den Haag.

When the skies over Bosnia were slowly opened again in late 1995 and early 1996, after the NATO-led bombing of Serbian forces' military and communications positions around Sarajevo and central Bosnia that started

in late August 1995 and ceased in September 1995, I created a work that followed them in all of their 'spectral' qualities, entitled *Terminal*, that was first shown as part of the 'Sense of Order' exhibition in the Ljubljana Moderna Galerija in 1996. But 1995, as we learned in July and August, was also the year when the genocide over Bosnian citizens, started in 1992 by the army of s.c. Republika Srpska with the help of international mercenaries and Serb paramilitary forces with the tacit and many times not so tacit support of the federal forces of the Serb dominated Yugoslavia, took its final turns with the overrunning of the UN designated 'safe areas' of Srebrenica and Žepa. All that followed is a sad and cynical history of the betrayal of a people by an incapable, cynical and cowardly United Nations 'Protection' Force, a history of ruthless and well executed mass murder on an unprecedented scale for our part of the world in the late 20th century, enabled by an organized, rather well equipped, armed and completely honour-less military and paramilitary force and a stand-by European and world community, waiting for four years that the weak would be overrun and destroyed by the more powerful, and that a semblance of peace, built upon destruction might prevail. These attitudes are still sensed to this very day, despite the establishment of the International Criminal Tribunal for the Former Yugoslavia (ICTY) and the convictions of many and the silence of many more. Denial of genocide is still not a crime in Bosnia, or for that matter in all of former Yugoslavia and Europe.

Besides the survivors' memories, forensic evidence on the ground and the satellite and aerial reconnaissance photos that provided a silent witness to the brutality on the ground with their SIGINT, COMINT and IMINT systems, one other damning piece of evidence remained. The spectral trails of military communications that prepared, executed and later tried to hide the evidence of genocide. Trails, that were intercepted, recorded, deciphered, decoded and catalogued by a small force of tactical intercept operators using very basic equipment in strategic positions in Eastern Bosnia, including the mountains Konjuh, Okresanica, and positions in Dekici and Gradno. Some of which, to this day remain important SIGINT and COMINT positions for this part of the world, manned by the super secretive National Security Agency personnel and off limits to the rest of the world.

When I learned about the existence of this evidence, I started digging up the archives of the ICTY, the most obvious place, first slowly and with a lack of response from the court archivists and clerks, later, especially since the Krstić and Blagojević case archives and court exhibits went online, the results were here.

Later I met and talked to some of the people who set up this intercept operation and to a lot of people that re-lived the events from 1992 to 1995 and onwards with me, especially Hasan Nuhanović and Nedžad Hasanović and I am deeply indebted to them for the time and energy they are devoting in talking to me and opening up their archives, contacts and memories. The work *Territory 1995* was part of a long process that attempts to map, understand and reveal the role of tactical and strategic communications and their record in the execution of modern world genocide.

Keynote

Tokyo Galapagos

David d'Heilly (jp/us)

Filmmaker, Curator, Journalist, Translator

In a 2007 UN report, greater Tokyo, at 35,676,000, is regarded to be the world's most populous metropolitan area. Its nominal GDP is also the largest, estimated at just under 1.5 trillion. The current discourse on megacities, however, tends to focus on Mumbai, Mexico City, São Paulo, Shanghai and many other upcoming major conurbations. Tokyo tends to be seen as a special case, or an irrelevance. I found this interesting. The last time that Tokyo was featured in a major survey of urbanization was Saskia Sassen's "The Global City", in 1992. Now, in researching Tokyo, what we're finding is that much of what is successful about Tokyo, what keeps it the largest and most competitive city, are indeed the same things that bring it this claim to irrelevance.

The study of Tokyo is fascinating because its modernization is so succinct. Tokyo went, in the space of 100 years, from being a medieval castle town, in a nation which had expressly excluded modernization, to being the world's largest megacity. Tokyo exploded; but only horizontally. Today, central Tokyo has a population density of some 35,600/mi². This is similar to Brooklyn, at 34,920/mi². Brooklyn, however, is 86% multi-unit dwellings, whereas a similar percentage of Tokyo's homes are two-story single family dwellings. And this is not just for residential areas. As late as 1997, there were only 70 buildings over 30 stories high in all of Tokyo.

If all of America lived at central Tokyo's population density, they would fit in the state of New Hampshire. The advantages would include things like independence from foreign oil, everyone would bike, or take public transport. Municipal health care would be a complete non-issue. It would be a real boon for the planet. Of course, it would never work. America-ville would still need to defend its borders, and who knows what political implications would come of that kind of concentration. But if it happened they would have a truly awe-inspiring greenbelt.

Japan has less land, and much of it is mountainous. Tokyo, in any event, does already have these concentrations in its center. It is a tight horizontal

concentration of single family dwellings, now 20 years into a “lost decade”, generated by a property asset-value bubble. To be clear, this took place almost exclusively in domestic finance, so there was no global crisis attendant to it. Tokyo’s housing areas still require minimal public investment. Real estate is very efficiently used, with sidewalks often moonlighting as semi-public gardens, and renovation taking the place of what used to be rebuilding. There are still no bad neighborhoods, or gated communities in Tokyo. If anything, with the subsequent fall in land prices, central Tokyo has seen its population increase.

One of the big reasons that Tokyo’s lesson is seen as something irrelevant is that the labor markets are notoriously inflexible. The foreign community is a scant 1% of Tokyo’s population, English (or other) language facility is uniformly dreadful. Even for its own citizens, the norm for salaried workers is one company per career. For decades Japan has watched its population aging, and so far, national downsizing seems to be the agreed consensus. Where it should have politicians that influence world affairs, it is run by bureaucrats. Japan’s national debt is nearly twice its GDP, second only to Zimbabwe, but this debt is held by those same home-owners. What struck me was the absolute reliability of its currency throughout the past decade despite the fact that it has been so poorly managed.

The thing that is most impressive about Tokyo is the industry of the city. Small manufacturing, retail, and food service are pervasive throughout the city, so much of it created in the service of Tokyo’s urbanization – refining its own urban environment. Japan has more blogs than any other country, and they are impressively obsessive. Millions of human hours detailing all manner of human experience, and no doubt almost none of it will ever provide any reference to anything but the Japanese speaking world. There are mobile phone sites that aggregate tens of thousands of GPS data encoded, photo posts daily about microclimates throughout the city, to help forecasters address the effects of urban microclimate guerilla rains that develop too quickly for the national meteorological agency. People famously sleep anywhere. There are internet cafes where one can shower, eat and sleep, for \$20 a night. They’ll even let you register your address there, while you’re getting set up in the city. Tokyo’s fashions, its cuisine, its love hotels or karaoke, its thousands of volkswagen-van sized pubs, its high-tech toilets... These are not business models which are in any way exportable.

I’m not saying that what works for Tokyo will work anywhere else. I’m not saying that it should. But I hope to be able to say that Tokyo, the world’s largest conurbation, in many ways an extremely efficient megalopolis, functions partially because of its incompatibility with global norms, and that this is something worth considering for any conurbation. Rather than a world of same-same cities based on high-return interchangeable modules of competitiveness, how great it would be if each city, especially if human culture is to be re-written in a common model on the planet, was its own galapagos of irreconcilable difference and mutual incomprehension.

P 54

Ludic Maps

- Alison Gazzard (gb):
Datalogging the Landscape

- Polise De Marchi (br):
Re(cognition) Mapping. Redefining Space, Place
and Territory

- Margarete Jahrmann (at/ch), Verena Kuni (de):
Uplay. Urban Playgrounds. Developing Ludic Strategies and
Interfaces for Participatory Practices in Urban Spaces

Datalogging the Landscape

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The path is an extension of walking [...] Thus the walking body can be traced in the places it has made: paths, parks, and sidewalks are traces of the acting out of imagination and desire. (Solnit 2006: 29)

The natural world allows us to leave our mark through the footsteps we make in the sand, and through the wearing of the turf as we create short cuts to our destinations. It is these individual, unique distinctions that track our movement, yet due to natural world phenomena we may not see or experience these exact same routes again. The footsteps are washed away and the desire line once created by a shortcut may become overgrown as a new, quicker route takes its place.

GPS datalogging devices now enable us to track our routes through space. A walk across the worldly landscape can now be saved into the digital landscape, a world of multiple pixels and in many instances two-dimensional flat plains. De Certeau writes of the 'walker' who experiences the routes through the city, in contrast to the 'voyeur' who views the city's design from the rooftops above (de Certeau 1984: 92). Now, both the walker and voyeur are in many ways coexisting simultaneously through these technologies. Providing these two instances ask the question of how our experiences of walking and wandering across the landscape differ from the representations provided by the mapped view. The act of wandering combined with this form of emergent map creation allows for both practices to be undertaken seamlessly, with the digital map growing with every physical step. These maps differ those found within the pages of books, or even those paths that can be seen on already digitally mapped satellite views. These maps are personal to our own journeys. Although they can be shared, each route can also remain solely the property of its creator, as they wander away from the constructed pavements, sidewalks, roads and trails in the search of their own



newly defined routes. Geotagging photos and collecting the data on digital maps to share with others provides a window to some of these experiences, enabling us to create what Tuan defines as 'landmarks' (Tuan 1977: 71). Instead of more traditional map markers such as churches, windmills and railway stations, the photographer and walker of the path determine these new user-generated landmarks. The landmarks although two-dimensional photographs depict three-dimensional worlds, adding an extra layer to the map, far removed from the iconic representations of top-down simplified objects. These maps can also become annotated with wiki comments and videos extending the once worn path further either during or after the walk. Each datalogged route can be annotated with the walker's own narrative.

The datalogger can capture the route made by our footprints and draw the lines in-between, whilst the narrative of the journey is still determined by the walker in their pictorial representations. The images provide an idea of a landscape through the eyes of the walker, as although the GPS fixes the photograph to a point on the map, the actual position in terms of where the walker was facing is still only held in the moment the photograph was taken and is left as a memory through a displayed image. In the absence of taking any photographs on the route, we can view other people's imagery taken along the same route. However these images are part of the other walker's narrative and experience. The same natural, evolving landscape will hold subtle differences each time it is walked. The routes captured may be personal to the walked experience. Therefore the imagery often only means something to the person that took it, such as the pattern on a tree trunk, which may not be found as easily by other walkers. The natural landscape

also continues to grow and evolve, therefore the digital snapshot needs to be constantly updated to expand with its ephemeral nature.

It can be seen that these smaller, individual, experiences are yet to exist on 'traditional' maps, with the walker acting as explorer in these instances. The digital map provides a contrast to the already constructed worldly path always found in amongst the forest canopy. This new data is now being mapped permanently for the user as their movements are tracked with their every step. New digital paths are created, and can be viewed without the need for physical worldly path to be constantly worn away in order for the route's presence to be remembered. This raises the issue of how are we now, through digital technologies, re-mapping the landscape with this collected data. This paper examines our relationships with the new maps we create in relation to the real world walking experienced whilst constructing them and how these growing technologies are possibly reworking our understanding of these re-generated routes, trails and places.

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Re(cognition) Mapping. Redefining Space, Place and Territory

Since its origins, the maps were meant to set a mode of understanding, interpretation and representation of the world.

As a communication tool, the maps are able to spatializing the interaction among social, economic and cultural urban reality in a graphic expression that provides the meaning of the urban system itself.

Geographical representation systems such as Google maps, Google earth and Google view have introduced a new way of understanding the world from a small to a large scale, allowing anyone, anywhere and anytime to collaborate in the construction of the urban representation by geotagging and geoblogging an urban experience.

In the city, there are different systems of signs that collide, combine and hybridize setting up new languages and redesigning old modes of representation. This can be even more intense regarding the technological developments that not only modify how one represents the space, but completely changes what one calls space.

Taking into account the idea that the analogical ways of representing the city have been overlapped by the digital ones, an exercise of the representation of the São Paulo city was developed based on a semiotic methodology to be applied to the Graduate Course of Interface Design. Once the city concentrates all the metaphors of the digital age: network, interface, interaction, territory, representation and connection, the students are constantly exposed and influenced by the urban environment, as well as they have been directly or indirectly designing for it.

The first goal was to construct a representation of the city by means of registering regarding the different layers of perception of space and time, and consequently, of urban memories. The idea of memory has been related to the notion of perception, considering that one can just memorize what is perceived. The discussion on representing through a map is focused on cross-disciplinary and collaborative production embodying art, media, architecture, urbanism, design, geography and technology. The project aimed at

discussing how to visualize spatial and personal relations taking into account the increasing mobility and the saturation of electronic media that transforms linear narratives in networked forms (Mogel, 2008).

Considering maps as a tool of orientation and navigation, the proposed exercise starts with a semantic diagram which comprises the contemporary urban subjects related to the São Paulo city. This first reflection is a product of the semantic interpretation of the urban reality. From this starting point the students are motivated to produce graphic metaphors by means of postal cards. Both semantic and graphic approaches are established to introduce the students to a conceptual way to represent the city that combines different repertoires and graphic expressions that make part of the design discipline. This first stage of the project potentializes the symbolic interpretation of the urban reality, once the representation is based on the collective and conventional sense of the city.

Then, motivated by this first approach, the students are invited to experience the city as a phenomenon in a movement of observation and perception capturing visual urban fractions, moving images, sounds, real situations and subjective impressions with their cell phones. The physical space becomes an interface for the representation of contemporary life in the city once it supports different languages and media.

All the collected urban visual materials are geocoded and geotagged as well as linked to the initial semantic and graphic representation. The intersemiosis between the city and its representation intend to create an ongoing map that expresses analogical and digital ways of representing the urban experience in a critical and constructive cartographic experiment. This map should be presented as a result of the city as an interface of observing, creating and materializing stages and sensible layers of the city of São Paulo.

Vilém Flusser pointed out that humanity lives in a codified world where communication establishes the premisses between understanding and representation of the phenomena that take part into the world. For Flusser (2007, p.130) the man “must mediate, must give a ‘sense’ to the world.”

The new media, especially the locative one allows broad participation from all who live and interact in the city. The research project aims at establishing a students’ proximity towards communication and production of the contemporary city through the use of mobile technology by means of images and videos. They provide material to represent a map that materialize the city through the students’ diverse cognition. Thus, the ongoing project considers the very individual perception from the common citizen leveraged to a larger scale that ends up in a collaborative, democratic and inclusive map. An ever-green reinterpretation of physical cities and the meaning of urban life thorough digital media and interface design.

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Uplay. Urban Playgrounds

Developing Ludic Strategies
and Interfaces for Participatory
Practices in Urban Space

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Location: N 51° 27' 22" E 6° 43' 56"

Code: C

This is a game. This is not a game.

Do you want to play?

Some Rules

Space, place and time do matter.

If public space becomes fiction, same is for borders separating playgrounds from other spaces.

The relativity of time is more than a famous formula.

You can try to ignore the ghosts of the past. However, you cannot avoid meeting them. And they might like to play.

If you consider sensation, fantasy, narrative, challenge, fellowship, discovery, expression and submission as nodal for triggering game pleasures you should not forget that the same is for life in general.

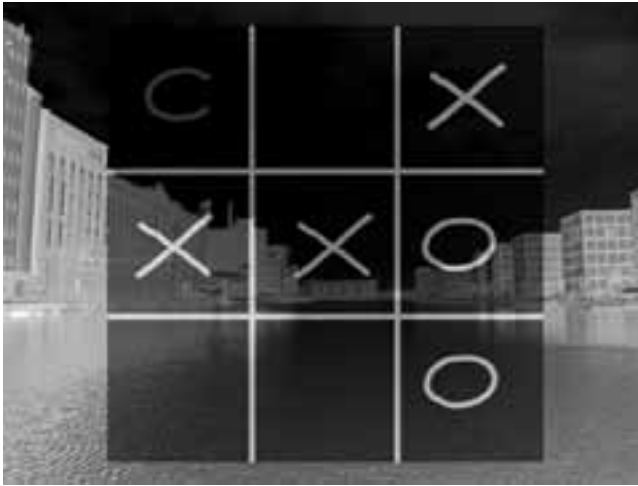
Commitment is essential. However, commitment does not mean obedience. Watch out. Listen. Yet do not only focus on two senses. Smell, touch, and taste are relevant as well.

You will never get what you've expected.

Suspension of disbelief is not an appropriate option.

Mechanisms of mutual observation may increase attention and intensity.

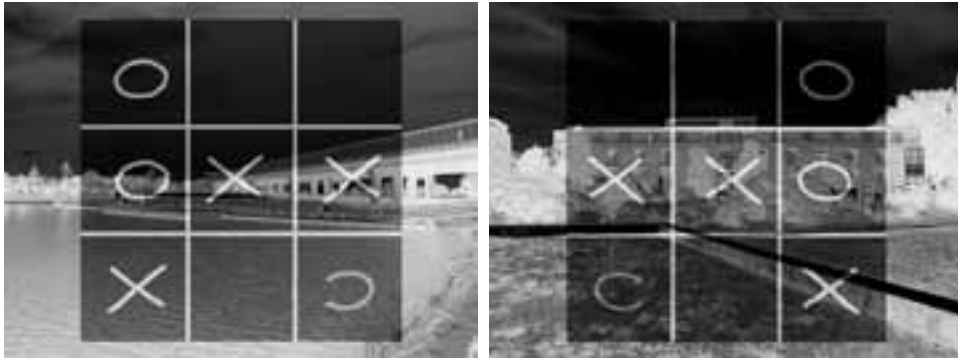
They may also increase levels of stress, distress and distrust.



Someone has paid for this. What if this someone is you?
Obviously, humans get pleasure from another's displeasure. Yet you might also get pleasure from someone else's pleasure. Ever tried?
You will have to decide how to deal with gender difference: you can ignore, balance, accept, or strengthen it. However, you will have to deal with the consequences as well.
Sharing knowledge will be helpful for others – and therefore for you.
Fate is another word for lacking power. There's nothing supernatural about it.
If you think of play as a game, you will lack any chance to win.
Five of ten instructions prove as useless. Another four are misdirecting or simply wrong. Thus you will have to find the right one.

This one is for you.
Good Luck!





About Uplay Ruhrort

UPLAY is a workshop for artists and researchers involved in the development of ludic strategies and interfaces for forms of social/participatory/political (inter-)action in urban space. On the issues are a.o. locative strategies and tools for urban play, potentials and problems of participatory formats and collaborative/distributed/networked game development.

Participants are not only invited to present and discuss their own projects, but to collaborate on the development of a game(-level) located at Ruhrort. A public lecture-presentation by the workshop leaders is followed by closed workshop-sessions for applied participants; game sessions are open to the public.

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Workshops

- Antti Ahonen (fi):
■ Towards the Post-Digital Era

- Andy Gracie (gb), Marc Dusseiller (ch):
■ Hackteria and Bioelectronix

- Andrew Gryf Paterson (gb/fi):
■ Herbologies/Foraging Networks

Antti Ahonen (fi)KOELSE
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Towards the Post-Digital Era

Association of experimental electronics was founded on September 2002. Since then we have been gathering old consumer electronics and other electronic waste turning it into different kinds of audiovisual instruments, installations and other things.

When we started we had both aesthetic and environmental reasons for choosing our medium. Perfectness and unlimited possibilities of digital media seemed very boring for us, since we all loved the roughness of the D.I.Y analog experiments. We also were very concerned about the environmental effects of digital mass-culture.

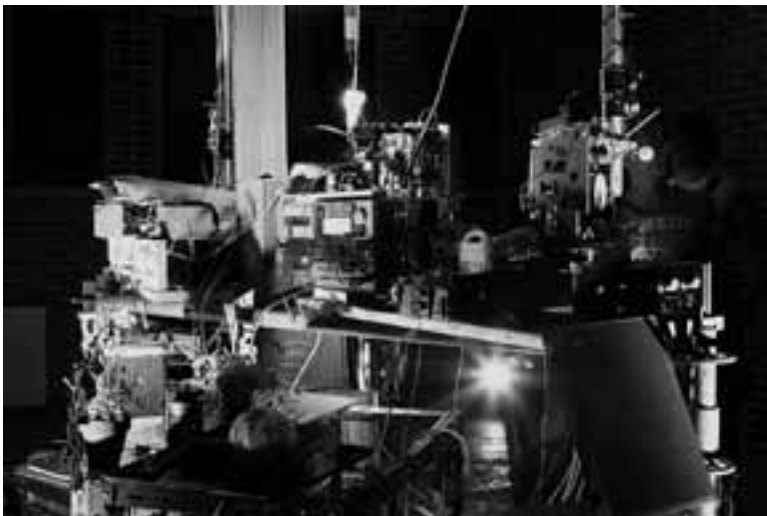


Fig. 1: Workshop exhibition, Gallerie Spanien 19, Århus Denmark 2006 Photo: Antti Ahonen



Fig. 2: Koelse live at ihme-club, Vanha, Helsinki 2009 Photo: Antti Ahonen

The problem of digital culture is the shortening product cycle. Moores law states that the number of transistors that can be placed inexpensively on an integrated circuit doubles every two years. This enables the exponential growth of computing power, but also leads to the exponential amount of electronic waste.

During the last 8 years, we have taken apart or modified hundreds if not thousands of different devices mostly from 1950s to 1990s. Judging by the waste, there are three distinctive trends you can see in all consumer electronics: reducing size, increasing complexity and decreasing quality.

It is commonly believed that exponential growth of computing-power can continue forever. Theoretically it might be so, but the lifespan of the devices cannot exponentially shorten forever. For some reason the shortening cycle does not seem to reflect on the materials being used. Consumer electronics are still made from oil-products and metals. Even the only organic material, wood, has been replaced by plastic to make things smaller.

Lately there has been lot's of talk about issues like peak oil, ecological sustainability and fundamental problems of western financial model. Still there have been quite little discussion about sustainability of digital culture.

Digital culture is not static, it is dynamic. All digital devices need to be upgraded for newer products in an ever-shortening cycle. Production of new products require new oil to be pumped, metals to be mined, energy to do this and also a working market where these products can be bought and sold.

Digital culture as we know is very fragile and not ecologically sustainable. It will not last forever. In Koelse one of our aims is to think what kind of technology could we have after the digital era. As a consumer-society waste



Fig. 3: Koelse studio Photo: Antti Ahonen

is the legacy we leave for future generations. The least we can do is to give some kind of instructions on what you can do with it.

We have been working hard to figure out what you can do with a pile of electronic waste, soldering iron and a couple of screwdrivers and pliers. We do not only want to reproduce the old analog technology, we are trying to build a model to sustain electronic art.

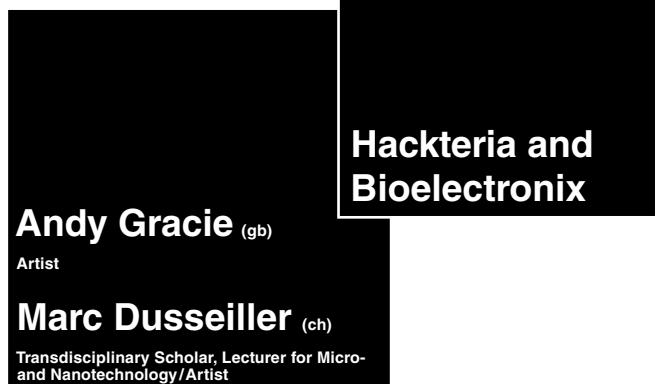
Electronic music has come a long way from an avantgarde art-form to an essential part of many genres of popular music. Our aim is to educate the future generations so they can build their electronic instruments and produce the electricity they need so when neither of those are not commercially available it is not the end of electronic music, just the beginning of its postdigital era.

Koelse:

Association of experimental electronics is a group of experimental electronics enthusiasts. They gather old consumer-electronics and transform it into sound producing devices. With these experimental devices they play concerts, build installations out of them and teach how to build similar things. Their mission is to show that you can turn your own electronic waste into interesting audiovisual experiments. Koelse's projects have been seen and heard around Europe on festivals, museums, galleries and alternative art spaces since 2002.

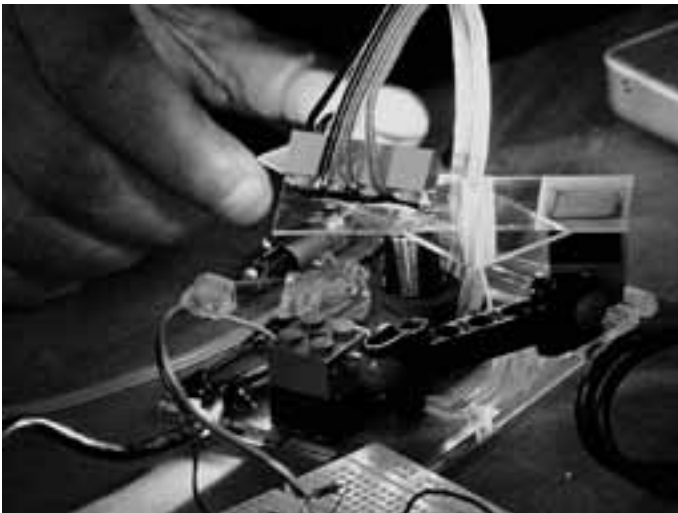
<http://www.koelse.org>

<http://www.myspace.com/koelseorg>



Hackteria is a collection of Open Source Biological Art Projects instigated by Andy Gracie, Marc Dusseiller and Yashas Shetty with the aim of developing a rich resource for people interested in developing projects that involve DIY bioart, open source software and electronic experimentation. Hackteria encourages scientists, hackers and artists to combine their expertise, write critical and theoretical reflections, share simple instructions to work with lifescience technologies and cooperate on the organization of workshops, festival and meetings.

The majority of our work so far has been under the label 'Bioelectronix', a marriage between the bio and the electric, or to be more succinct the locus at which the biological and the technical can meet, or collide. We embrace the idea that technology, applied correctly and intelligently, can be a valuable tool for the investigation of the organic world around us, and especially the microbiological world that remains largely hidden. A second, and maybe more important aspect of the Hackteria ethos is that our techniques, our discourse and our products are open source. This is not to align ourselves with the growing FLOSS movement but as a necessary stance in the current scientific climate. It is said that Athanasius Kircher was the last man to know everything, and in the 330 years following his death it has become impossible to know all of science not just because of the sheer volume of information but also due to the prevalent practice of obscuring or patenting scientific discovery and knowledge. To be able to share a deep and informed sense of wonder about our world it is necessary to be able to engage with scientific knowledge and practice, by getting our hands and minds wet and dirty we can empathise and understand the functioning of nature much more intimately. By understanding the things around us we can make more meaningful descisions about how we relate to and interact with them. The hackteria project, through procedures such as the 'Bioelectronix for Artists' series of workshops, tries to stick a foot in the door and open it a fraction more.



So, what is Bioelectronix?

Bioelectronix is not bioelectronics; the emerging science of biomedical technology centred around such devices as 'lab on a chip' and implantable neural interfaces. Complex and expensive technologies from the closely guarded and secret world of cutting edge scientific research. Bioelectronix is the appropriation and development by artists and hackers of certain aspects of these technologies in an open-source and DIY environment. Relatively cheap and simple technologies which can be shared, improved and distributed through an open network of users and enthusiasts.

Bioelectronix has emerged out of artistic disciplines such as bio-art, software-art and robotic-art; although the philosophy is less to do with defining an approach to working, and more to do with an open sharing of ideas,

opinions and practical techniques to allow artists to experiment freely and economically with a range of cutting edge tools and techniques.

Bioelectronix of some form or other has been practiced by various artists, each with their own approach, style and interpretation for a number of years now, and we make no claims to inventing the 'artform'. A common factor of the works that are most appropriate to the Hackteria bioelectronix idea is that none explicitly or directly discuss the notion of the cyborg. That is to say not solely about the augmentation of an organic element through the use of technology, but more the attempt to create a situation where organic and machinic, natural and artificial can begin to form relationships and methods with which to share and transform information and behaviours.

Bioelectronix can be much simpler still. Works involving bioelectronix can be simple experiments in exploring possible relationships between ubiquitous life and ubiquitous technology. Maybe we employ the technology to enable us to simply view or sense organisms which are too small to see with the naked eye. Or we could carry out simple processes of interaction allowing us to share in some way the experiential world of other life forms. Or maybe we just want to see 'what happens if...'

The fact that we are coupling the organic and the electronic is the key issue, the fact that we are working with the ubiquitous life forms of bacteria, protozoa or insects alongside the ubiquitous technology of electricity and the possibilities for communication and transformation it offers. We must emphasise that we are not aiming to recreate the fictional work of Dr. Frankenstein; ours is a gentler inquiry into the many intriguing aspects of a mostly 'invisible' world with comment and critique on our ongoing and rapidly changing relationships with the natural world due to the assimilation of technology into most aspects of our lives.

Despite this, the ethics of each practitioner of bioelectronix must be his or her own. We each have our own views on how we should treat the rest of the animal kingdom, and we each put into practice our own methodologies to allow us to reflect those ethical views. The practice of bioelectronix may lead us to a point where we feel a need to reappraise and review those ethics. Maybe this practice will lead us to reflect in new and different ways the way we use technology, how we relate to the animal kingdom and how we appreciate the advantages of science which has been built on techniques similar to these.

Herbologies/ Foraging Networks

Andrew Gryf Paterson (gb/fi)

Artist-Organiser, Doctor of Arts Candidate in Media Lab, Aalto
University School of Art and Design, Helsinki
Member of Piknik Frequency ry. (Pixelache Festival)
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The Herbologies/Foraging Networks programme, emerges from the Baltic Sea region, focused in Helsinki (Finland) and Kurzeme region of Latvia, now extends beyond. In a series of events during 2010, it has explored the cultural traditions and knowledge of herbs, edible and medicinal plants, within the contemporary context of online networks, open information-sharing, and biological technologies.

Herbologies refers to the different ways of knowing about plants and their extracts (as well as sometimes fungus and bee products), as wild and cultivated food, medicine and related crafts. Foraging Networks raises awareness of organised behaviours and practices in gathering wild food, including micro to macro ecosystems or socio-political levels. Combining with the fields of social/visual arts, craft, cultural heritage, media, network cultures and technology, attention is made to different ways of sharing knowledge, especially within the Baltic Sea region and between different generations. Furthermore, it has also been initiated from the position of 'not-knowing', and being an immigrant to a landscape and environmental habitat.

The cultural and experiential knowledge about wild useful plants (for eating and medicinal purposes) found in the southern Finnish and Swedish landscape has changed dramatically over the last two generations. The grand-parents, and many parents of the current generation, knew/know many things about the plants and roots surrounding them in the countryside. However, with the mass shift of families to city and urban locations, this knowledge is being lost, slipping away from the younger generation, at a time when information & media sharing online is booming. Across the Baltic Sea, many middle-age and older Latvians (and likewise Lithuanians and Estonians) still carry everyday knowledge with them into the woods, meadows, to the coast, forest and fields. However, even there that is becoming less



Fig. 1: Herbologies/Foraging Networks ISEA Collage

Photo credits from top-left:

Herbal Tinctures Workshop – cc Ulla Taipale,

Expedition to Kurzeme – Aiste Virsulyte,

Windowfarms Finland – cc Wojtek Mejor

Photo credits from middle-left:

Herb collection – Signe Pucena,

Dyykkaus table – cc Sigardus,

Bee Observatory – cc Annemie Maes

Photo credits from bottom-left:

Forest foraging – Ossi Kakko,

Kultivator sign – cc Andrew Gryf Paterson

common. There are many published materials in medical or pharmacy books, but very few stories sharing the cultural context – how to gather, how to prepare, how to use, reflections on use and how such knowledge is learned.

Younger people's interest in sustainable food production and environmental awareness appears to be creating a revived interest in local and ecological use of plants. For those in their teens, 20s and 30s, online information, data and social networking sites have also become the main communication and sharing medium. In addition, do-it-yourself/ourselves 'maker' culture has blossomed in recent years thanks to audio-visual culture, and in particular participatory platforms which support digital image or video sharing. Strongly based on community-created content, this trend is also extending to 'grower' and 'forager' sites, which share example recipes and activities.

How does one attract attention and inter-generational appreciation: With books, interviews, online maps, workshops, mobile-guided tours, open-source information or DNA code? Based in practicalities, Herbologies/Forag-

ing Networks develops a cultural programme of events that shared, in the Baltic context, how to grow individually or together with hydroponics during the dark winter months; and invited artists and designers to go out foraging with wild plant experts, and document countryside traditions from elders in the summer months.

In a similar way that a culture's songs, stories and dances are documented and valued as intangible cultural heritage, we argue that the practices of foraging and 'making' using herbological knowledge are important to document also as cultural traditions of respect: In relation to nature, to promote the ancient, historical and contemporary interdependence people have had with herbs, plants and other related natural produce, and to maintain this continuity.

The different meeting points of the 3 collaborating coordinators – Andrew Gryf Paterson (SCO/FI), Ulla Taipale/Capsula (FI/ES) & Signe Pucena/SERDE (LV) – were introduced at Pixelache Helsinki Festival in March 2010. On that occasion, there were seminar presentations by international artists and Finnish plant experts; curated workshops shared their particular knowledge about processing plant materials – fermentation, alcohol extraction and DNA manipulation; round-table discussion about foraging in the Finnish urban context; and manifestation of the WindowFarms Project was made by locals in the Kiasma Museum of Contemporary Art, Helsinki.

Most recently a midsummer expedition to rural towns Aizpute and Alsunga in Kurzeme, Western Latvia, was hosted by Interdisciplinary Art Group SERDE in June 2010, with a series of fieldwork excursions and ethnographic interviews for an international and interdisciplinary group of guests. The main topics for the herbologies expedition included how to recognise, gather and use wild plants and flowers for teas, infusions, tinctures, sauna whisks, homemade herbal cosmetics, midsummer crowns, as well as the 'pharmacy' of plants found outside in nature.

These events have been received with interest beyond the Baltic shores, and we look forward to further activities, extending the network to other locations in new collaborations.

<http://pixelache.ac/helsinki/herbologies-foraging-networks>
<http://herbologies-foraging.net/>
<http://agryfp.info>



Index of Authors

Aceti, Lanfranco (tr)

■ 113

Lanfranco Aceti works as an academic, artist and curator. He is Visiting Professor at Goldsmiths College, London; teaches Contemporary Art and Digital Culture at Sabanci University, Istanbul; and is Editor in Chief of the Leonardo Electronic Almanac (the MIT Press, Leonardo journal and ISAST). He is also the Artistic Director and Conference Chair for ISEA2011 Istanbul.

Aedo, Tania (mx)

■ 322

Tania Aedo is currently the director of Laboratorio Arte Alameda. She has been active in the field of art and technology over the last fifteen years. She worked at the Multimedia Center from its opening in 1993 and directed the Center from 2005 to 2007. As part of her art practice she has developed several three-dimensional interactive simulations, as well as various multiuser environments on the Internet, exploring the idea of construction and transformation of subjectivity.

Ahonen, Antti (fi)

■ 518

Antti Ahonen is a visual artist from Helsinki. He has been working as an art director for the association of experimental electronics since 2002 and is part of Pixeache festival team since 2002. He also works as a photographer shooting media-art, performance-art and theater.

Albuquerque, Inês (pt)

■ 481

Inês Albuquerque is a Ph.D. student and art researcher in Art Studies, at Communication and Art Department, University of Aveiro, Portugal. The main interests of her research are the relations between art, science and technology, and the questions around the public, artist and work in contemporary art.

Andersen, Christian Ulrik (dk)

■ 165

Christian Ulrik Andersen, professor at Aarhus University and chair of Digital Aesthetics Research Center, researches within the field of interface aesthetics and criticism. He mainly works with ludic aspects and the public interfaces of digital urbanity. <http://person.au.dk/en/imvcua@hum.au.dk>

Ascott, Roy (gb)

■ 284

Roy Ascott is an artist and theorist whose research is invested in cybernetics, technoetics, telematics, and syncretism. He is the founding president of the Planetary Collegium, an international platform for art, technology and consciousness research, based in Plymouth University.

Askham, Giles (gb)

■ 353

Giles Askham is a senior lecturer at London Metropolitan University. An artist and curator he previously founded peterborough digital arts. He now works independently and was the lead curator of the exhibition Game/Play produced in collaboration with Furtherfield. He has written and exhibited widely.

Audry, Sofian (ca)

■ 469

Sofian Audry is a new media artist from Montréal, Canada. His practice mixes new technologies with the social and cognitive mechanisms of human being. His recent work focuses on electronic interventions, incorporating technological objects in the natural environment.

Baalman, Marije (qc/ca)

■ 53

Marije Baalman is an artist and scientist. She studied Applied Physics in Delft and completed her Ph.D. on Wave Field Synthesis at the TU Berlin. She works in the areas of real time audio and wireless sensor networks and performs and publishes internationally in artistic and scientific contexts.

Ballard, Susan (nz)

■ 247

Dr. Susan Ballard is a writer, curator and artist. She teaches Electronic Arts at the Dunedin School of Art, New Zealand. Her recent publications examine utopia, the antipodes, sound, noise, and the contemporary politics of art in digital times. She edited The Aotearoa Digital Arts Reader in 2008.

Bambozzi, Lucas (br) ■ 437

Lucas Bambozzi is an artist producing works in a range of formats such as video, installation and interactive environment. His works have been shown in solo and collective exhibitions in more than 40 countries. Beside his artistic work he is the curator of the arte.mov Mobile Art Festival.

Bang, Seungae (kr) ■ 487

Seungae Bang is in the master course in the graduate school of Soongsil University, the Global School of Media.

Barnes, Steven J. (ca) ■ 338, 395

Dr. Steven J. Barnes: Initially trained as a visual artist, Steven subsequently became a behavioural neuroscientist – his focus is on the topics of learning and memory, emotion, and neurological and psychiatric disorders. He currently teaches neuroscience at the University of British Columbia, and creates VR applications.

Bäucker, Sven (de) ■ 65

Sven Bäucker *1969; studied Architecture: Prof.Nicolic/ RWTH Aachen; 1997 Dipl.Ing. Architect (graduate engineer); 2003 label MOKIK (founder) graphic + exhibitiondesign + engineering; (Künstlerhaus Stuttgart, CASCO/Utrecht, Hamburger Bahnhof/Berlin, Ludwig Boltzmann InstituteMedia.Art.Research/Linz-

Beddard, Honor (gb) ■ 446

Honor Beddard is Curator of Computer Art in the V&A's Word and Image Department. She currently works on the AHRC funded Computer Art and Technocultures project. Honor is responsible for researching and cataloguing the V&A's collection of computer-generated art and design. Prior to joining the V&A, she worked at the British Council and the Contemporary Art Society.

Beiguelman, Giselle (br) ■ 324

Giselle Beiguelman is a new media artist and professor at the Graduation Program in Communication and Semiotics of PUC-SP (São Paulo, Brazil). Curator of Nokia Trends (2008 and 2009), she is Artistic Director of Sergio Motta Institute. In her oeuvre she researches the cultural impact of the Internet and technology. www.desvirtual.com

Bell, John (us) ■ 146

John Bell is a Senior Researcher at the University of Maine's Still Water Lab and a Senior Developer at the Variable Media Network. His recent work focuses on areas including distributed knowledge systems, credibility in anonymous environments, and interdisciplinary design patterns.

Benford, Steve (gb) ■ 477

Steve Benford is Professor of Collaborative Computing at the Mixed Reality Laboratory in the School of Computer Science at the University of Nottingham. He published over two hundred works including two award-winning papers at CHI (2005 and 2009).

Bowman, Chris (au) ■ 171

Chris Bowman, BA (Hons), MA (Royal College of Art) is an artist and Director of Animation at the University of Technology, Sydney. He works in film, animation, and interaction and display. He has received funding from ACID (Australasian CRC), Screen Australia, and the Australia Council for the Arts.

Brass Art (gb) ■ 343

Brass Art are Chara Lewis, Kristin Mojsiewicz, Anneke Pettican (gb). Solo exhibitions: The Non-existence of the Unnamed, International 3 and Skyscraping, Yorkshire Sculpture Park. Group exhibitions: Inside Out Object Gallery, Sydney & RCA, The Economy of the Gift A Foundation, Tell it to the Trees, Croft Castle, ArtFutures, Bloomberg Space and Jerwood Drawing Prize

Breinbjerg, Morten (dk) ■ 127, 160

Morten Breinbjerg is an associate professor with a Ph.D. in computer music aesthetics at the Institute of Information and Media Studies, Aarhus University, Denmark. He researches in the field of computer music, digital aesthetics and software culture.

Bristow, Tegan (za) ■ 421

Tegan Bristow is an active interactive digital media artist based in and concerned with South Africa. Bristow additionally runs and teaches the Wits University Postgraduate Program in Interactive Digital Art, which includes interactive installation design, programming and Critical Studies in Digital Arts and Culture.

Brodsky, Michael (us) ■ 484

Michael Brodsky is currently a Professor of Art and Art History and Senior Faculty in Multimedia at Loyola Marymount University in Los Angeles, California. His work has addressed the transmission of text, image, data, and self in this current age of globalization and instant digital communication.

Brunner, Christoph (dk) ■ 265

Christoph Brunner is a researcher in the department of Arts & Media at the University of Arts in Zurich and at the same time completes a Ph.D. at the Centre for Interdisciplinary Studies in Society and Culture at Concordia University, Montréal.

Brunton, Finn (us)

■ 369

Finn Brunton is currently a post doctoral researcher at NYU, where he works on digital technology: history, privacy, anonymity, modification and misuse. He is writing a book about spam, and working on a novel. <http://finnb.net>

Buechley, Leah (us)

■ 82

Leah Buechley is an Assistant Professor at the MIT Media Lab where she directs the High-Low Tech research group. She is a well-known expert in the field of electronic textiles (e-textiles). She holds MS and Ph.D. degrees in Computer Science from the University of Colorado at Boulder and a BA in Physics from Skidmore College. <http://web.media.mit.edu/~leah/>

Burbano, Andres (co)

■ 403

Andres Burbano, originally from Colombia, is Ph.D. Candidate in Media Arts and Technology from University of California Santa Barbara. Burbano explores the interactions of science, art and technology in various capacities: as researcher, as individual artist and in collaborations.

Buschmann, Renate (de)

■ 143

Since 2008 Renate Buschmann, Ph.D. in Art History, is director of the imai – inter media art institute, a foundation for video and media art located in Düsseldorf/ Germany. Prior to that she worked as a free-lance curator, lecturer and editor of several books regarding modern and contemporary art.

Bustamante, Luis (co)

■ 276

Luis Bustamante lives and works in Berlin. Artist and Interaction Designer with a master of science in Digital Media. He has worked at the ZKM where he focused on his main interests: Data visualization, generative graphics, interaction with data (and people) in public spaces, video compositing.

Caianiello, Tiziana (de)

■ 152

Since 2007 Tiziana Caianiello, Ph.D. in Art History, has been Gerda Henkel research fellow at the imai – inter media art institute Düsseldorf, where she has conducted the research project Konkretionen des Flüchtigen (Materializations of the Fugitive) on conservation and presentation of media art installations. Since 2009 she is working as a research associate at the ZERO foundation, Düsseldorf.

Cantoni, Rejane (br)

■ 431

Rejane Cantoni was born in São Paulo; studies of Communication, Semiotics, Visualization of Information Systems and Expanded Cinema, in São Paulo and Geneva; since 1987 researches and develops immersive and interactive installations. www.rejanecantoni.com, www.cantoni-crescenti.com.br

Chavez, Mark (sg)

■ 391

Mark Chavez' research interests are in emergent computer animation techniques including synthetic sculpture, motion and related forms in popular culture, characterization and storytelling with real-time and rendered imagery exploring visual and behavioral representation in the animated form.

Chia, Marc (sg)

■ 139

Marc Chia aka One Man Nation investigates spirituality in technology through the medium of sound and performance. Currently, he is co-directing The UnifiedField experimental art space which he co-founded with Marta Moreno Muñoz and developing The Future Sounds Of Folk in collaboration with STEIM.

Chon, Suk (kr)

■ 328

Suk Chon is a Ph.D. candidate in the Global School of Media, the graduate school of Soongsil University. He is majoring in media art.

Claus, Jürgen (de/be)

■ 308

Jürgen Claus was Fellow and Research Affiliate at the CAVS at MIT, Cambridge, MA and professor at the Academy of Media Art Cologne. He exhibited at Electra, Paris 1983/84, ars electronica 1986, Light art from artificial light, Karlsruhe 2005/6. His work include underwater, solar art sculptures and 15 books.

Colubri, Andres (ar)

■ 281

Andres Colubri is a programmer, researcher and artist. His interests range from the algorithmic modeling of complex systems to the creative use of computer code for subjective expression and experimentation. He is currently involved in the development of the android version of processing.

Conradi, Ina (sg)

■ 259

Ina Conradi is Assistant Professor at the School of Art Design and Media, Nanyang Technological University, Singapore. Merging digital painting with experimental computer animation, her current research explores expressive capabilities of digital imaging and immersive art installation.

Constantini, Arcangel (mx)

■ 440

Arcangel Constantini is a multifaceted artist and independent curator, particularly interested in obsolescence of technological constructions and ideas to redefine them in an artistic context. He curates the cyberlounge of Museo Tamayo, and Festival transitio MX; director of the emerging gallery ¼. www.arc-data.net

Coover, Roderick (us)

■ 169

Roderick Coover makes interactive environments, and electronic poems. Titles include Unknown Territories (Unknownterritories.org), Cultures in Webs (Eastgate Systems), and Something That Happened Only Once (RLCP) among others. www.roderickcoover.com.

Coulton, Paul (gb) ■ 397
Dr Paul Coulton is a Senior Lecturer at Lancaster University and founder of the Mobile Radicals. He has over 15 years' research experience in mobile and leads the Mobile Experiences Group of the Nokia Innovation Network, which is an elite group of 20 universities around the world selected by Nokia.

Cox, Geoff (gb) ■ 221
Geoff Cox is currently a Researcher in Digital Aesthetics, Center for Digital Urban Living, Aarhus University (dk), Associate Curator of Online Projects, Arnolfini (gb), adjunct faculty of Transart Institute (de/us), and a co-editor of the DATA browser series (with Autonomedia).

Cramer, Florian (nl) ■ 230
Florian Cramer is head of the research programme Communication in a Digital Age at the Piet Zwart institute of the Willem de Kooning Academy, Rotterdam University, the Netherlands.

Cym (Simone van Groenestijn, nl) ■ 251
Cym is a net artist. She transforms an old farm in Austria into an art center and studies interaction design in Amsterdam at the same time. She teaches webdesign at the University of Nova Gorica in Slovenia. Her work includes interactive installations, photography and recycled arts. <http://cym.net/>

Czegledy, Nina (ca/hu) ■ 335
Nina Czegledy, award winning media artist, curator, educator, works internationally on collaborative art and science and technology and educational, projects. Her artistic practice is centered on the changing perception of the environment and the human body. Her lectures have been published in numerous books and journals. The Pleasure of Light, her most recent curatorial project premiers in September 2010 at the Ludwig Museum, Budapest.

Damm, Ursula (de) ■ 383
Ursula Damm has become known for her installations dealing with geometry and its social impact on public space. Her works are shown nationally and internationally in numerous exhibitions. Since 2008 she holds the chair of Media Environments (Media Arts & Design) at the Bauhaus-University Weimar.

De Bleser, Frederik (be) ■ 350
Frederik De Bleser is the author of NodeBox, teacher and co-founder of the Experimental Media group (Sint Lucas School of Arts, Antwerp) in 2004. <http://nodebox.net>

de Marchi, Polise (br) ■ 512
Polise De Marchi (Ph.D.) is architect, urbanist and associate professor in the Digital Interface Design Graduate Course at SENAC University where she is also enrolled in the research: "Information and Communication Technologies (ICT) applied to Design: interface [body, object, environment, city]".

de Menezes, Marta (pt) ■ 79
Marta de Menezes is a Portuguese artist with a degree in Fine Arts by the University in Lisbon, a MSt in History of Art and Visual Culture by the University of Oxford, and a Ph.D. candidate at the University of Leiden. She is currently the artistic director of Ectopia, an experimental art laboratory within a biological research institute in Lisbon. www.martademenezes.com

De Rosso, Luca (it) ■ 204
Luca De Rosso is an interaction designer graduated in 2009 at IUAV University of Venice after attending the IxD program led by Gillian Crampton Smith and Philip Tabor. In 2008 Luca did a five-months internship at IDEO Inc in Palo Alto, CA. He now works as a IxD consultant and sound designer.

De Smedt, Tom (be) ■ 350
Tom De Smedt is an artist, software engineer and a cognitive science hobbyist, affiliated with the Computational Psycholinguistics group (University of Antwerp) since 2008 and co-founder of the Experimental Media group (Sint Lucas School of Arts, Antwerp) in 2004.

deLahunta, Scott (nl) ■ 42
Scott deLahunta is Program and Research Coordinator of Motion Bank and Director of R-Research Wayne McGregor|Random Dance. He is also currently Research Fellow with the Art Theory and Research and Art Practice and Development Research Group, Amsterdam School for the Arts and serves on the editorial boards of Performance Research, Dance Theatre Journal and the International Journal of Performance and Digital Media.

Demers, Louis-Philippe (ca/sg) ■ 174
Louis-Philippe Demers makes large-scale robotic environments and interactive media artworks. He was Professor at the HfG/ZKM and currently is at the Interaction and Entertainment Research Centre at the NTU (Singapore).

d'Heilly, David (jp/us) ■ 506
David d'Heilly is working in the arts and journalism between Asia, Europe and the U.S. His writings have been published in eight languages, he has worked on numerous film and television productions and has curated and produced art exhibitions and festivals in Japan, The US, Sweden, and France.

Díaz Infante, Juan José (mx) ■ 316

Juan José Díaz Infante is an artist and an independent curator. He was consultant for the Federal Electoral Institute, National University UNAM and Compuserve. He is a constant lecturer in many national and international universities. His work has been shown at the Venice Biennale, Fotofest and European Cultural Month.

Dietrick, Joelle (us) ■ 104

Joelle Dietrick creates paintings, drawings and animations about contemporary nomadism. Her upcoming 2010 exhibitions include a solo exhibition at Colorado State University and collaborative projects at the TINA-B festival in Prague and Venice. She is based in Berlin. <http://joelledietrick.com>

Dietzler, Georg (de) ■ 271

Georg Dietzler is a socio-political environmental artist/curator/researcher for art, nature and environment. Besides art and ecology he curates and consults more sound art, experimental transdisciplinary music and media dance programmes. <http://www.dietzlerge.org>

Dinkla, Söke (de) ■ 116

Söke Dinkla studied Art History, Literature, Anthropology; 1994 grant of the DAAD for the USA; 1996 Ph.D. on the history and aesthetics of interactive media art. Curator at the Wilhelm Lehmbruck Museum, Duisburg. Since 2005 she is Artistic Director of the European Capital of Culture Office RUHR.2010 Duisburg.

Dodds, Douglas (gb) ■ 446

Douglas Dodds is the V&A's Senior Curator of Computer Art. He is also Head of Digital Collections and Services in the Museum's Word and Image Department, which incorporates the National Art Library and the V&A's western collections of prints, drawings, paintings and photographs. He is the Co-Investigator of the Computer Art and Technocultures project (CAT), funded by the Arts and Humanities Research Council.

Doherty, Christo (za) ■ 92

Professor Christo Doherty is Head of Digital Arts, in the Wits School of Arts, University of the Witwatersrand, Johannesburg, South Africa. He is also a photographer and video artist, his most recent exhibition, *Small Worlds*, examined rail technology, nostalgia and the South African landscape.

Drury, Sarah (us) ■ 45

Sarah Drury is a media artist working with interactive installation, interactive performance, and video. Her recent work uses collaborative processes and sensor-based live media to explore alternative embodiment, subjectivity and narrative. Her work has been shown widely at international venues.

Dubinsky, Lon (ca) ■ 121

Lon Dubinsky teaches in the Studio and MFA program at Concordia University. He is also a research associate of the Kamloops Art Gallery and the Canadian Museums Association and an adjunct professor in the Department of Visual Arts at the University of Ottawa.

Dumitriu, Anna (gb) ■ 242

Anna Dumitriu is a visual artist working with digital and biological media through installation and performance. She is artist in residence in the Centre for Computational Neuroscience and Robotics at The University of Sussex and working on her Ph.D. at The University of Brighton.

Duque, Alejandro (co) ■ 276, 409

Alejandro Duque is a Colombian video artist who is currently pursuing a PhD in philosophy of communication. His dissertation deals with the "trafficking" of ideas and concepts across marginalized communities and western philosophies. His research interest focuses on new technologies and open source software.

Dusseiller, Marc (ch) ■ 521

Marc Dusseiller is a transdisciplinary scholar, lecturer for Micro- and Nanotechnology and artist.

Duvall, Linda (ca) ■ 253

Linda Duvall is a Canadian media artist and educator who presents within gallery contexts, on the web, and within communities. Her work mimics the fieldwork of sociologists as she records conversations in order to discern meanings hidden in familiar language. www.lindaduvall.com

Eirund, Helmut (de) ■ 497

Helmut Eirund is professor for computer science and Scientific Director of the M2C Institute for Applied Mediatechnology and Culture. His actual project and research activities focus on mobile applications, multimedia systems, and electronic entertainment.

Evers, Lucas (ne) ■ 419

Lucas Evers is head of the e-Culture programme of Waag Society in Amsterdam, he is interested and involved in projects where art, science, design and the societal meet, extending the e of e-Culture to a wider range of technology informed arts and their representations of, meaning for and effects on society. www.waag.org

Faure Walker, James (gb) ■ 305

James Faure Walker was born in London 1948. 'Golden Plotter', Computerkunst, Gladbeck, 1998. Exhibited, ISEA from 1990; DAM Gallery, Berlin; Siggraph 1995 – 2007. 11 works in Victoria and Albert Museum. Editor, *Artscribe* 1976. Book, 'Painting the Digital River', Prentice Hall 2006. Commissioned artist, FIFA 2010 World Cup.

Fiazza, Maria-Camilla (it) ■ 386

Maria-Camilla Fiazza is a computer scientist with an interdisciplinary interest in embodied intelligence. Her main area of work is biomimetics; the focus, in particular, is on understanding and replicating the mechanisms through which living systems organize and process information.

Franco, Francesca (gb) ■ 448

Francesca Franco is Research Fellow on the AHRC funded project "Computer Art & Technocultures" (CAT) at Birkbeck College and the Victoria & Albert Museum. She is a lecturer at the School of History of Art, Film and Visual Media at Birkbeck, and is currently completing her Ph.D. in History of Art.

Fratzskou, Eugenia (gb) ■ 491

Dr Eugenia Fratzskou lectures Architecture at Westminster University, London. Her recent international research publications present pioneering types of digital site-specific art & drawing. Her award-winning and internationally recognised work has been presented in Leonardo/MIT, Venice Biennale etc.

Frey, Damian (at) ■ 59

Damian works with sound, code, light, and electronics. He is interested in creating senses of space that transcend the immediate physical environment. His ideas come from a background that includes musicianship as an improvising electroacoustic performer, software programming, and spatial design.

Frieling, Rudolf (de/us) ■ 145

Rudolf Frieling is Curator of Media Arts at the SF-MOMA and Adjunct Professor at the California College of Art and the San Francisco Art Institute. He was curator of the International VideoFest Berlin (1988-1994), at the ZKM Center for Art and Media in Karlsruhe / Germany (1994-2006) and headed the restoration and exhibition project "40yearsvideoart.de".

Fritsch, Jonas (dk) ■ 162, 265

Jonas Fritsch is currently pursuing his Ph.D. at Aarhus University working on a multitudinous thinking-together of interaction design and affect theory in conjunction with practical interaction design experiments carried out at the Center for Digital Urban Living, Dep. of Information and Media Studies.

Fukuhara, Shiho (jp) ■ 236

Shiho Fukuhara received a BA (Hons) in Fine Art from Central St Martins and an MA in Interaction Design at the Royal College of Art. Shiho was Artist-in-Residence at the Le Pavillon at the Palais de Tokyo in Paris in 2004, at IAMAS (Japan, 2006), at ISEA 2008 (Singapore) and AmbientTV (2008, UK).

Gansing, Kristoffer (se) ■ 364

Kristoffer Gansing is co-director of The Art of the Overhead, a media-archaeological festival devoted to the overhead projector. He's a Ph.D. student at K3 Univ. of Malmö, with a project on media art working transversally across old and new media.

Garnicnig, Bernhard (at) ■ 201

Bernhard Garnicnig studies Digital Art at the University for Applied Arts and Fine Art at the Academy of Fine Arts, both in Vienna. In his work as artist and curator he is mainly interested in shaping social, institutional and audiovisual space-time constellations.

Gazzard, Alison (gb) ■ 509

Alison Gazzard is a Post-Doctoral Research Fellow in New Media at the University of Bedfordshire, UK. Her research examines the boundaries between the virtual, the real and the spaces in between most notably through videogames, augmented reality games and location-based media.

Gergely, Krisztián (hu) ■ 386

Krisztián Gergely is studying IT, as part of his B.Sc in computer program design at ELTE Budapest. He started working with Kitchen Budapest in 2009, as a researcher and software developer. He is mainly concerned with live coding and with how to get non-specialists to get a taste of it.

Giannachi, Gabriella (gb) ■ 477

Gabriella Giannachi is Professor in Performance and New Media, and Director of the Centre for Intermedia at the University of Exeter. Her book publications include Virtual Theatres (2004) and Politics of New Media Theatre (2007).

Giebeler, Julia (de) ■ 152

Julia Giebeler obtained her diploma in paintings and sculpture conservation at the Cologne Institute of Conservation Sciences / University of Applied Sciences in 2009. Her diploma thesis was about Interactive Video Installations. Documentation and Re-Installation on the example of Bill Seaman's work 'Exchange Fields'. She currently is conservator trainee of contemporary outdoor sculptures at the Museum Abteiberg, Mönchengladbach.

Gracie, Andy (gb) ■ 521

Andy Gracie is an artist working between various disciplines including installation, robotics, sound, video and biological practice.

Grau, Oliver (at) ■ 88

Oliver Grau is Professor for Image Science/Media Art at Danube University. Translated in 12 languages, publications include: Virtual Art, MIT Press 2003; MediaArtHistories, MIT Press 2007; Imagery of the 21st Century, MIT Press 2010. He also developed www.virtualart and www.gssg.at.

Green, David (ca)

■ 254

David Green is an instructor of New Media in the School of Image Arts at Ryerson University, Toronto Canada. His interest in identity, autobiography, narrative and memory as they relate to larger sociopolitical and geographical concerns drives his research and art-making practice.

Gromala, Diane (ca)

■ 338, 395

Canada Research Chair Dr. Diane Gromala teaches in the School of Interactive Arts & Technology at Simon Fraser University, Canada. Gromala's work has been exhibited and published worldwide and is in use at over 20 hospitals and clinics.

Guasque, Yara (br)

■ 190

Yara Guasque is a multimedia artist, professor in the Post-Graduation Programme in Visual Arts of UDESC. She holds a Ph.D. from the Communication and Semiotics Programme of PUCSP. Jury of the 8th Sergio Motta Art and Technology Award. Cultural Director of ABCiber.

Guerra, Rui (pt/nl)

■ 225

Rui Guerra is involved in open source culture with a critical view on communities. Besides teaching at the Royal Academy of Art (the Hague) and working at V2_, Institute for the Unstable Media (Rotterdam), he has initiated several self-organized events and developed participatory art projects.

Haider, Gottfried (at)

■ 201

Gottfried Haider graduated from the class of Digital Arts at the University for Applied Arts Vienna in 2009. He is interested in urban sound scape theory and currently researching on the interdependencies of the algorithmic acquisition of space, its coexistent manipulation and numerology.

Hamlyn, Jim (gb)

■ 110

Jim Hamlyn is an artist and lecturer and has exhibited in such countries as Japan, Spain, Thailand and the USA. His work incorporates a range of approaches from public sculpture to interactive media and the moving image.

Harris, Yolande (nl)

■ 133

Composer and artist Yolande Harris works with sound, its image and its role in relating humans and their technologies to the environment. Through her performances, installations, instruments and writings, she investigates how sound relates us to our surroundings, both architectural and ecological.

Harrop, Patrick (ca)

■ 38

Patrick Harrop is an associate professor of architecture at the University of Manitoba, CMRI research chair, as well as a Ph.D. candidate at Concordia University. His research/creation is in the philosophy of technology and architecture, digital fabrication, responsive environments and materials.

Hartmann, Doreen (de)

■ 124

Doreen Hartmann studied Comparative Literature, Media Studies & Computer Science at the University of Paderborn (Germany), where she currently teaches Media Aesthetics and works on a Ph.D. thesis on the art of computer demos. Her research interests are digital media & (sub-)cultures and new media art.

Hastilow, Luke (gb)

■ 353

Luke Hastilow is a Lecturer in Music Technology Audio Systems at London Metropolitan University. His research focusses on electronics and computing technology for the arts. He has worked internationally on installation and interactive media projects and is a software author and publisher.

Hauser, Jens (de/fr)

■ 40

Jens Hauser is a Paris based art curator, writer and video maker focussing on the interactions between art and technology, trans-genre and contextual aesthetics. His current research at the Institute for Media Studies at Ruhr University Bochum is concerned with biomediality.

Haw, Alex (gb)

■ 240

Alex Haw is an architect and artist operating at the intersection of design, research, art and the urban environment. He runs atmos, a collaborative experimental practice which produces a range of architecture and events including private houses, installations and larger public commissions.

Heibach, Christiane (de)

■ 455

Dr. Christiane Heibach holds a position as research fellow and lecturer at the Staatliche Hochschule für Gestaltung in Karlsruhe and is currently funded by the DFG (The German Research Foundation) for her project "Epistemologie der Multimedialität". Research fields: media theory and aesthetics.

Heimbecker, Steve (ca)

■ 377

Steve Heimbecker, Montréal, CA., has been creating immersive audio art compositions and installations internationally since the mid 1980s. His work is based upon the discretization of signal, multichannel sound design and transmission, kinetic energy, nature, and cross modal synesthetic perception.

Her, Jiun Jhy (gb)

■ 110

Jiun Jhy Her is a graphic designer, artist and a Ph.D. candidate. Since 2007, he has been studying at Gray's School of Art. His doctoral study has been focusing on the interactivity between the audience and digital interactive arts in public space.

Hilbeck, Angelika (de/ch)

■ 181

Angelika Hilbeck is a senior scientist at the Institute of Integrative Biology at ETH Zurich and serves as Co-Director of Studies, for the Z-Node – Ph.D. program University of the Arts, Zurich. Her studies and research focused on agro-ecology and biodiversity, including bio control, sustainable farming practices, and insect-plant interactions. Since 1994, her research centres on bio-safety issues of GMOs. She is also co-founder and acting chairperson of the European Network of Scientists for Social and Environmental Responsibility (ENSSER).

Himmelsbach, Sabine (de)

■ 73

Sabine Himmelsbach is the director of the Edith Russ Site for Media Art in Oldenburg. From 1999 – 2005 she was Exhibition Director at the ZKM in Karlsruhe. As a writer, she has contributed largely to catalogues and magazines. She has lectured internationally on topics related with media art and contemporary culture.

Hobijn, Geert-Jan (nl)

■ 466

Geert-Jan Hobijn is the founder of the art collective Staalplaat Soundsystem, that has created a multitude of sound installations, moving more and more into public space.

Holzheid, Anett (de)

■ 290

Anett Holzheid serves as scientific lecturer as well as supervisor of the laboratory of literary film studies (ALF) at the German Department of Mainz University. Her work interconnects literature, linguistics, and media studies. Forthcoming publication on postcard-culture (2010).

Howse, Martin (de)

■ 136

Martin Howse is an artist/programmer and theorist, born in 1969 in the UK; educated at Goldsmiths College Fine Art London 1989 and based in Berlin. Martin Howse has exhibited, performed and collaborated worldwide using custom, open software and hardware modules for data/code processing and generation.

Hundertmark, Sebastian (de)

■ 383

Sebastian Hundertmark graduated in product design in 2005. Since 2008 he is working as a lecturer at the department of media art & design at the Bauhaus University. His fields of expertise and interest span from exploring the frontierland between design, art and science to furniture design.

Huybrechts, Liesbeth (be)

■ 424

Liesbeth Huybrechts is doing a Ph.D. research in Cultural Studies (KULeuven) on the use of new media as risky objects in participatory design and art projects. She is research coordinator of www.socialspaces.be (Media, Arts & Design Fac. Genk), exploring the social potential of art, design, new media.

Jacobs, Katrien (cn)

■ 227

Katrien Jacobs is a scholar, curator and artist in the field of new media and sexuality and works as assistant professor at City University of Hong Kong. She has written books about sex art and Internet pornography. Her work can be found at www.libidot.org

Jacquemin, Christian (fr)

■ 356

Christian Jacquemin is interested in the applications of augmented and virtual reality to arts, design, and architecture. He has collaborated on many art/science projects and organized several workshops and seminars in this area. His research is focused on interactive facial animation and spatial augmented reality.

Jahrman, Margarete (at/ch)

■ 514

Margarete Jahrman is artist and professor for Interaction Design/Game Design at ZHDK Zurich. With the Ludic Society and individually she is engaged in the research and development of ludic interfaces, and she has recently submitted her Ph.D. thesis on 'Ludics. The Art and Politics of Play'. www.konsum.net.

Jaschko, Susanne (de)

■ 419

Susanne Jaschko is curator of contemporary art and based in Berlin, Germany. Her curatorial practice focuses on experimental art which goes beyond art as commodity and renews the concept of art and its social and cultural functions. She regularly lectures and writes about contemporary art that relates to her curatorial practice. www.sujaschko.de

Jasso, Karla (mx)

■ 300

Karla Jasso is a Ph.D. student at UNAM. Her current research focusses on the relation between art and science at Novohispanic Imaginary. She is author of the book 'Art, Technology and Feminism: New Symbolic Imagining'. Since 2007, she has been chief curator at the Laboratorio Arte Alameda in México City.

Ji, Jiakang (cn)

■ 380

Jiakang Ji is a structure designer of Virtual Lab and always communicates with manufacturer.

Jiang, Fei (cn)

■ 380

Fei Jiang is a Ph.D student of Shanghai University and an interactive designer of Virtual Lab. He is mainly in charge of hardware of interaction art works.

Kalisch, Frederik (de) ■ 209

Frederik Kalisch is a student in his final year at Folkwang-Hochschule, Essen. The focus of his studies is experimental and strategic design. He is currently finishing his diploma at Audi AG Ingolstadt at brand strategy department. Other interests include making music and old scooters.

Kanary Nikolov(a), Jennifer (nl/gb) ■ 451

Jennifer Kanary Nikolov(a) is Lecturer in the Art and Research Honours program of the Gerrit Rietveld Academy and the University of Amsterdam, and a Ph.D. candidate at M-Node, Planetary Collegium, University of Plymouth, UK.

Keinanen, Mia (fi/ru) ■ 48

Mia Keinanen is a dancer, choreographer and developmental psychologist based in Helsinki and Moscow.

Kekou, Eva (gr) ■ 458

Eva Kekou's recent publications focus on public space, interactive media art and audience theories. She has been a lecturer at the University of the Aegean, Greece for several years and worked as a research fellow at academic institutions in London. She has a multidisciplinary academic background.

Khaorapapong, Nanda (gb) ■ 389

Nanda Khaorapapong is from Bangkok, moved to London in 2003. His reading and experimenting have involved aesthetics of body data, human-human interaction, human-machine symbiosis and analogue-digital actuators/sensors. His current focus is on invisible sensing interfaces for human emotions.

Kim, Jihyun (kr) ■ 281

Jihyun Kim, born in Seoul, is a media artist and researcher whose projects address data visualizations and interactive media installations that make new sense and foster novel perspectives in passive urban life. <http://threeecologies.com/>

Kim, Yonggeun (kr) ■ 217, 487

Yonggeun Kim is a Ph.D. candidate in the Global School of Media, the graduate school of Soongsil University. His research area is the man-machine dis/continuity throughout the theoretical studies on the new media art practices.

Klein, Georg (de) ■ 268

Georg Klein works as sound/video/media artist. He developed a "situational" concept of site-specific art in public space (Germ. Sound Art Award 2002, Media-Space Award 2006). With his office KlangQuadrat he realised installations all over Europe, Israel and USA. Based in Berlin, currently in Istanbul.

Koefoed Hansen, Lone (dk) ■ 500

Dr Lone Koefoed Hansen (asst. prof. Aarhus University) researches the interface between mobile media, urban space and everyday performativity.

Koplin, Martin (de) ■ 497

Martin Koplin is the Managing Director of the M2C Institute for Applied Mediatechnology and Culture in Bremen and Scientist in Residence of the Brooklyn Experimental Media Center at the New York University. His actual work focusses on digital public and digital art in the new Polis.

Kozel, Susan (us) ■ 48

Susan Kozel is a writer, dancer and philosopher. She directs Mesh Performance Practices.

Kuni, Verena (de) ■ 514

Verena Kuni is scholar in art, media & culture theory and professor for Visual Culture at Goethe-University Frankfurt. Her research is dedicated a. o. to DIY & prosumer cultures; media of imagination; technologies of transformation; transfers between material & media cultures; games, play & toys as tools. www.under-construction.cc

Kusch, Martin (qc/ca) ■ 51

Martin Kusch is a visual media artist and artistic co-director of kondition pluriel. He is teaching at the Dept. for Digital Arts at the Univ. of Applied Arts in Vienna. His artistic practice is based on the creation of media installations and interactive performance environments.

Kwastek, Katja (de) ■ 311

Katja Kwastek is art historian and worked at the Ludwig Boltzmann Institute Media.Art.Research. from 2006 to 2009. Before, she was Assistant Professor at the Ludwig-Maximilians-University (Munich) and Visiting Scholar at the Rhode Island School of Design (Providence, RI). She has curated exhibition projects, lectured and published widely, including the catalogue "Ohne Schnur. Art and Wireless Communication" (2004). Currently she finishes a book on the aesthetics of interaction in digital art.

Laforet, Anne (fr) ■ 475

Anne Laforet is a researcher and a writer. Her Ph.D. thesis (from the University of Avignon in France in 2009) on the preservation of net art has just been published in print and online. Anne writes on digital art and culture for Arte.tv and Poptronics.fr and makes some sounds with her computer.

Lambert, Nick (gb)

■ 444

Nick Lambert is Researcher in Digital Media Art at the Department of History of Art and Screen Media, Birkbeck. He is Principal Investigator on the Computer Art and Technocultures project, held jointly with the Victoria & Albert Museum, and researches the history of digital art. He is also associated with the EVA Conference and is Chairman of the Computer Arts Society.

Lamontagne, Valerie (qc/ca)

■ 30

Valérie Lamontagne is a digital media artist, designer, and curator. She founded 3lectromode, a design group developing wearables combining D-I-Y technology with current fashion research. Her Ph.D. investigates "Performativity, Materiality and Laboratory Practices in Artistic Wearables."

Ledezma, Domingo (us)

■ 297

Domingo Ledezma, native of Venezuela, is Associate professor of Latin American Literature at Wheaton College, in Massachusetts USA. His recent publications and research focus on Jesuits New World intellectual productions, baroque natural histories and literature of voyages and shipwrecks.

Lee, Hoyeon (kr)

■ 328

Hoyeon Lee is a Ph.D. candidate in the Global School of Media, the graduate school of Soongsil University. He is majoring in computer graphics.

Lee, Jangwon (kr)

■ 328

Jangwon Lee is in M.S. programme in the Global School of Media, the graduate school of Soongsil University. He is majoring in media art.

Lewis, Chara (gb)

■ 343

see Brass Art.

Li, Qiansheng (cn)

■ 380

Qiansheng Li is a software engineer, using ActionScript3 language production animation and interactive interface.

Liu, Jingming (cn)

■ 380

Jingming Liu is a digital art teacher from Shanghai University who works on digital interactive art.

Løfgreen, Lars Bo (dk)

■ 158

Lars Bo Løfgreen is a Ph.D. fellow at the Department of Information and Media Studies at Aarhus University. Current research interests include the aesthetics of resistance, locative media art, philosophy of aesthetics as well as the interplay between historical and neo avant-garde movements.

Lorrain, Dennis (us)

■ 460

Denis Lorrain was Assistant-Professor at the University of Montreal from 1980 to 1982. He is now currently Professor für Musikinformatik at the Hochschule für Musik in Karlsruhe, Germany.

Ludovico, Alessandro (it)

■ 223

Alessandro Ludovico is a media critic and chief editor of Neural magazine since 1993. He's one of the founders of the Mag.Net (Electronic Cultural Publishers) organization, has been a research fellow at the Willem de Kooning Academy, and served as an advisor for the Documenta 12's Magazine Project.

Mackern, Brian (uy)

■ 434

Brian Mackern, new media artist. Professor for Digital and Electronic Arts at Fine Arts Institute, University of Uruguay. New Media Art coordinator/curator at Cme – Subte, Montevideo. Founder and organizer of dorkbot.mvd, the local version of dorkbot events and Kilo-Ciclo/Arte Sonoro: experimental soundvisual concerts. <http://netart.org.uy/brian.html>

Magnusson, Thor (gb)

■ 198

Dr Thor Magnusson, a senior lecturer at University of Brighton's Faculty of Arts, works in the fields of music and generative art. Recent research and publications are on improvisation in electronic music, philosophy of technology, instrument design and music programming language design. Thor is a co-founder and member of the ixi audio collective.

Maiori, Laura (ar)

■ 340

Laura Maiori was born in 1978. She graduated in Graphic Design and is currently a Professor and Researcher at the Multimedia Design Department, Universidad Nacional de la Plata. Her fields of work are graphic design, photography and interactive art. She lives and works in La Plata, Argentina.

Maracco, Valeria (nl)

■ 59

Valeria is a dancer and videographer who lives and works in Amsterdam. You can see her work at <http://vimeo.com/valplayground>.

Martin, Benjamin Lee (fr)

■ 356

Benjamin Lee Martin is an artist in the field of social digital interactive technologies. He has a BA in Arts and Masters in Visual Communication. He lives and works in Berlin & explores connecting people with virtual holes and humanography and diverse art using light, movement, wind and water. www.benjiart.com

Massumi, Brian (qc/ca) ■ 27

Brian Massumi is a political theorist, writer and philosopher. He is a professor in the Department of Communication Sciences at the University of Montreal. His research focuses on the experience of movement and the interrelations between the senses, in particular in the context of new media art and technology and emergent modes of power associated with the globalisation of capitalism and the rise of preemptive politics.

McKeown, Anita (gb) ■ 101

Anita McKeown is Creative Director of ASU and an interdisciplinary artist living and working in South London. Her current research considers the potential of artists' interventions to develop and sustain public intimacy with place and how technology can contribute to this process.

McMullen, Shannon C. (us) ■ 472

Shannon C. McMullen is currently an Assistant Professor of Art and Design at Purdue University. McMullen teaches in Purdue's new Electronic and Time-Based Art Program. Her current research interests include intersections of nature, art and technology and culture-led urban regeneration.

Meerhoff, Jasmin (de) ■ 399

Jasmin Meerhoff (B.A.) is media and cultural scholar, Bauhaus University Weimar. Her main focuses are the history of media and technology, Usability and Governmentality Studies. She is currently writing on a history and theory of user's manuals.
<http://www.beepbeepbeep.de>

Menotti, Gabriel (gb) ■ 494

Gabriel Menotti is a Ph.D. Candidate on the Media and Communications departments of PUC-SP and Goldsmiths University of London. He works as an independent media curator and producer, interested in different forms of cinema, cultural circuits and grassroots activity.

Miyazaki, Shintaro (de) ■ 136

Shintaro Miyazaki (theorist/artist). 1980* Berlin, educated in Media Studies, Musicology and Philosophy University of Basel. Lives and works in Berlin, is interested in the sonic epistemologies of everyday technologies and is a Ph.D. researcher under W. Ernst at Humboldt University Berlin.

Mojsiewicz, Kristin (gb) ■ 343

see Brass Art.

Monroy, Lopez, Ivan (mx) ■ 119

Ivan Monroy Lopez is a Mexican programmer and writer. Studied media at the Piet Zwart Institute, Rotterdam. Interested in programmatic print, and niche publishing. His new zine is called "print soapbox." He will give you a copy if you just ask :-)

Morse, Margaret (us) ■ 401

Margaret Morse is Professor for Film & Digital Media. She works on digital and electronic media theory and criticism, media art, media history, technology and culture, film history and theory, German cinema, documentary and science fiction. Her recent research addresses the "distribution of the sensible" in specific examples of contemporary art.

Muller, Lizzie (au) ■ 311

Dr Lizzie Muller is a curator and researcher, Senior Lecturer at University of Technology, Sydney. Lizzie's research investigates audience experience from a curatorial perspective. She has adapted tools and techniques from Interaction Design to work with audience experience as a material, and was founding curator of Beta_Space, a dedicated "prototyping" environment for interactive art at the Powerhouse Museum in Sydney.

Müller, Steffen (de) ■ 209

Steffen Müller currently studies visual communications at the Folkwang-Hochschule Essen, Germany. Coming from illustration, at the moment he focusses on spatial augmented reality (or so called projection mapping) while working as a visual artist together with the neongolden collective Vienna, Austria.
<http://lab.neongolden.net>

Mundy, Owen (us) ■ 263

Owen Mundy is an artist who investigates public space and its relationship to data. His artwork highlights inconspicuous trends and offers tools to make hackers out of everyday users. He is an Assistant Professor of Art at Florida State University and DAAD fellow, currently based in Berlin.

Munz, Thomas (de) ■ 464

Thomas Munz is an independent curator and editor living in Berlin. In his curatorial and editorial work he is focusing on contemporary art at the crossroads of technology, science and nature, and on the cultural and political implications of digital and electronic media on present-day society.

Neupert, Max (de) ■ 274

Max Neupert is an artist and faculty member at the Bauhaus-Universität Weimar where he teaches media art. His recent audiovisual environment Breakup was presented in São Paulo, Melbourne and Weimar. Besides real-time A/V works satellites have been a research focus of his in the last years.

Nijs, Lucas (be) ■ 350

Lucas Nijs has worked as a graphic designer for Apple Computer and teaches at the Sint Lucas School of Arts in Antwerp, Belgium. He is head of the Experimental Media research group that develops NodeBox.
<http://nodebox.net>

O'Dwyer, Rachel (ie)

■ 131

Rachel O'Dwyer is a researcher in Trinity College Dublin, undertaking a Ph.D. in mobile media distribution funded by IRCSET. She has published essays and book chapters on mobile music and is currently launching 'Interference', an online journal of audio culture. www.interferencejournal.com

Oliveira, Rosa Maria (pt)

■ 481

Rosa Maria Oliveira is a professor at Communication and Art Department, University of Aveiro, Portugal. Develops the artistic work under holography, and the research in ID+ Research Institute for Design, Media and Culture, under the relation between art, science and technology and artistic education.

Ossa, Catalina (cl)

■ 406

Catalina Ossa, born in Santiago, Chile in 1982. She is a multimedia artist, founder of the Art and Science studio or _am and has worked on the production of Tesla: Summit of Digital Culture in 2008-09, and 9th Video and Media Arts Biennial. She is one of the Directors of www.plataformaculturaldigital.cl.

Osthoff, Simone (br/us)

■ 415

Simone Osthoff, Associate Professor in the School of Visual Arts, Penn State University, focuses her research on new media art and historiography. She is the author of *Performing the Archive: The Transformation of the Archive in Contemporary Art From Repository of Documents to Art Medium*, 2009.

Ozsvald, Eszter (hu)

■ 386

Eszter Ozsvald studied Industrial Design Engineering and Mechatronics in Hungary. She joined Kitchen Budapest media lab in 2008 and worked there for a year. Her research focuses on developing a robotic fish and on exploring the field of interactive art.

Pagola, Lila (ar)

■ 412

Lila Pagola lives and works in Argentina. Educated in visual arts, she began experimenting with computer graphics and interactive design in the 90s. Her recent research focusses on relationship between free software/culture and art, as a critical and interdisciplinary approach to artistic production.

Paloque-Bergès, Camille (fr)

■ 366

Camille Paloque-Bergès is a Ph.D. candidate at the Université de Paris VIII. Her thesis, researching Internet folklore and network communication, is due for 2010. She teaches Internet history and Net art, and has published a book on the "poetics of programming" (at Archives contemporaines, 2009).

Parikka, Jussi (fi)

■ 372

Dr. Jussi Parikka is the Director of CoDE – The Cultures of the Digital Economy-institute at Anglia Ruskin University, Cambridge. Reader in Media Theory and History, and Pathway Leader in Media Studies/Co-Director of Anglia Research Centre in Digital Culture (ArcDigital).

Park, JeongHo (kr)

■ 332

JeongHo Park is student in Intermediales Design in FH-Trier, Germany. He had B.Sc. (Civil Engineering, Yonsei Univ.) and M.A. (Music Technology, KNUA.) in Korea. His works are based on Media, Music and Interactive Design. He is doing research in Architecture, Media and Code Art. <http://jeonghopark.net>

Pasquet, Olivier (fr)

■ 207

Olivier Pasquet works at Ircam and elsewhere. His pieces are played in concert halls and museums around the world. They are more and more focussed on text and physical geometry allowing some kind of materialization. He got the Villa Medici, the Arcadi, a residency at Tokyo Wonder Site and Chile.

Paterson, Andrew Gryf (gb/fi)

■ 524

Andrew Gryf Paterson is a Scottish artist-organiser, cultural producer and independent researcher, based in Helsinki, Finland. He works across the fields of media/network/environmental arts and activism, with a participatory practice involving workshops, events, and storytelling.

Peach, Ricardo (au)

■ 195

Dr Ricardo Peach (AU) is the Program Manager of the Inter-Arts Office at the Australia Council for the Arts, where he initiated the Australia Council's first virtual world art initiatives. Born in Volksrust, Mpumalanga, he and his family migrated from South Africa to Perth, Australia in 1980. In Second Life he is known as Ricardo Paravane.

Pettican, Anneke (gb)

■ 343

see Brass Art.

Pinsky, Michael (gb)

■ 331

Michael Pinsky has created challenging works exploring issues shaping our public realm. He has shown at the TATE, Saatchi Gallery, ICA, BALTIC, Liverpool Biennial, CCC, Tours; Armory Center of the Arts, LA and the Rotterdam International Architectural Biennial. Dr Pinsky, a graduate from the Royal College of Art, has received numerous awards including: RSA, Art and Architecture, Arts & Business, Wellcome Trust and was shortlisted for the Gulbenkian Museums Award.

Pisano, Leandro (it)
■ 193

Leandro Pisano is a curator, writer and new media producer involved in many projects regarding the aesthetic side of new media and technologies. He is the initiator and director of Interferenze festival and he had lectures and presentations during new media art and interaction design events worldwide.

Plana, Laura (es)
■ 278

Laura Plana has a Bachelor in History of Art, Barcelona and a Master in Curating Media Art MECAD. Curated Cartographies of non-site an Exhibition on Digital Art, Landscape and Open Social Media. Leonardo Scholarship at Media Art Histories. Editor at Database Virtual Art. Ph.D. Research on Visual Cultures and Digital Aesthetics.

Pold, Søren Bro (dk)
■ 156, 165

Søren Bro Pold has done research in media-, digital and interface aesthetics and art currently mainly related to urban and public interfaces. Forthcoming is "Interface Criticism – Aesthetics Beyond the Buttons," co-edited with Christian Ulrik Andersen. <http://person.au.dk/en/pold@multimedia.au.dk>

Polli, Andrea (us)
■ 181

Andrea Polli is an artist, Associate Professor in Fine Arts and Engineering and Mesa Del Sol Chair of Digital Media at The University of New Mexico. Polli's work has been presented widely in venues including the Whitney Museum's Artport and The Field Museum and has been reviewed by the LA Times, Art in America, Art News and others. www.andreapolli.com

Popp, Julius (de)
■ 292

Julius Popp is a media artist and former masterclass student of the Academy of Visual Arts (HGB Leipzig). His works reflect a scientific approach to digital culture and a use of technological precision as artistic expression. Recent exhibition and award: Krefeld (2010), catalogue: Resolution (2009).

Poulin, Marie-Claude (qc/ca)
■ 51

Marie-Claude Poulin is a choreographer and co-founder of kcondition pluriel. Her work confronts the relationship between the body and technology in a very organic manner. Her choreographic language is made of multiple bodily states, showing the body in a perpetual process of reorganization.

Proske, Pierre (au)
■ 177

Pierre Proske's work involves exposing the unspoken relationships we have with technology and harnessing machines into exploring new aesthetics. Both resisting and exploiting modern techno-utopian trends. Proske employs humour and the absurd as weapons against the invasion of computer augmented realities.

Puig, Ivan (mx)
■ 428

Ivan Puig is a mexican artist based in Mexico City. He is Member of the collective TriodO. He did studies in electronics and Fine Arts. His actual work is a mixture of disciplines in wich the use of technology is part of discourse.

Purkrabek, Armin (de/sg)
■ 174

Armin Purkrabek is a stage designer, researcher and media artist. Purkrabek develops futuristic scenographies thru digital/analogue art experiments.

Ramos-Velasquez, Vanessa (br/de)
■ 214

Vanessa Ramos-Velasquez is an interdisciplinary artist creating installation, performance art, videodance, videoart, film, and hybrid art, having acquired a diverse background along her various global residencies through what she describes as anthropophagic hunger. She now lives in Berlin.

Remy, Nicolas (fr/gr)
■ 458

Nicolas Remy specializes in building physics, acoustics and lightning design. He has taught at the national superior school of Architecture in Grenoble and the national superior School of Architecture, Marseille. He currently teaches at the Department of Architecture of Thessaly University, Greece.

Richard, Birgit (de)
■ 67

Prof. Dr. Birgit Richard is professor for New Media in theory and practice at the Goethe University in Frankfurt since 1998. Her fields of specialisation include: aesthetics of everyday life (contemporary youth cultures, fashion, design, popular culture, gaming: representation of women in Computer Games...).

Ride, Peter (gb)
■ 311

Peter Ride is a curator and Research Fellow, University of Westminster, UK. Peter's research addresses how different organisations have a different understanding of their audiences and this is a 'framing' device that can affect how a work is encountered and experienced. He also looks at the way that audience research can be used to re-define the curatorial scope of an exhibition.

Rivera, Enrique (cl)
■ 406

Enrique Rivera (1977) is a media artist and researcher from Chile, director of Plataforma Cultura Digital, an Art, Science and Technology lab from Santiago. His research focusses on the history of media art in South America and the implications of digital culture on developing countries.

Rivera-Seguel, Claudio (cl) ■ 319

Claudio Rivera-Seguel is an artist/curator/educator working on interdisciplinary initiatives related to art, science and technology. Experiments with digital graphics, immersive telepresence and physical computing. Graduated from UBC Architecture School, Canada, 1992. Recipient of "The Millenium Grant" (Canada, 1999).

Rouhiainen, Leena (fi) ■ 48

Leena Rouhiainen is a dance artist and phenomenologist on faculty at the Theatre Academy of Helsinki.

Rowland, Duncan (gb) ■ 477

Duncan Rowland is the Senior Research Fellow in Social Computing at the Mixed Reality Laboratory in the School of Computer Science at the University of Nottingham. He published over forty articles and exhibited at CHI, SIGGRAPH, UbiComp and the London ICA.

Russegger, Georg (at/jp) ■ 233

Georg Russegger is curator, producer and researcher holding a Ph.D. in media theory, working in the field of Anthropology with a focus on selforganization in media integrated knowledge cultures. As Scientific Manager he develops a European Masters in Ludic Interfaces at the Interface Culture Lab Linz.

Sakrowski, Robert (de) ■ 65

Robert Sakrowski *1966; studied Art History. From 2007–2010 he worked at the Ludwig Boltzmann InstituteMedia.Art.Research in Linz ("netpioneers 1.0"). From 1999–2003 he headed the project "netart-daten-bank.org" at TU-Berlin and curated several exhibitions and lectures in the field of netbased art.

Salter, Christopher (qc/ca) ■ 33, 53, 311

Christopher Salter is an artist, Associate Professor in fine arts at Concordia University and researcher at Hexagram, Montreal. Salter's performances, installations and publications have been presented at numerous festivals and conferences around the world. He is the author of *Entangled* (MIT press, 2010).

Sampson, Tony (gb) ■ 372

Dr. Tony Sampson is a London-based academic and writer. He is the coeditor (with Jussi Parikka) of *Spam Book: On Viruses, Porn, and Other Anomalies From the Dark Side of Digital Culture* (2009) and currently writing his next book, *Virality: Contagion Theory in the Age of Networks*.

Schimana, Elisabeth (at) ■ 96

Elisabeth Schimana is a composer, performer and radio artist. Studies in electroacoustic music, musicology and cultural studies, founder of IMA Institut für Medienarchäologie.

Schläpfer-Miller, Juanita (gb/ch) ■ 181

Juanita Schläpfer-Miller, MSc. is a research associate at the University of the Arts in Zurich (ZHdK). She is an artist and science communicator and has developed interactive exhibits for science centres and museums. She was an exhibit developer and artist-in-residence at the Exploratorium in San Francisco and she has shown in galleries and museums in the U.S. and Switzerland.

Schmidt, Sebastian (de) ■ 460

Sebastian Schmidt is doctoral candidate (Music Informatics) on the University of Music, Karlsruhe. His recent work focusses on the cognitive description of music, that is based on relations between autopoiesis paradigm, aspects of Constructivism, and constructions from System Theory.

Schneider, Wolfgang (de) ■ 303

Dr. Wolfgang Schneider born 1945, Natural Scientist, Studies in Geology, History, History of the Arts (Universities of Cologne and Bochum), 1977-2010 Director of the Museum der Stadt Gladbeck, co-founder of the Gesellschaft für Elektronische Kunst, 1986-2010 international, biannual competition and exhibition for the "Golden Plotter Award, Gladbeck"; editor of catalogues in history and cultural history.

Schulze, Philip (de/sg) ■ 174

Phillip Schulze is a media artist, composer and improviser. Schulze develops site-specific visual and auditory experiences and collaborative action spaces.

Scott, Jill (au/ch) ■ 181, 451

Jill Scott is a professor for research in the Institute Cultural Studies in the Arts, at the Zurich University of the Arts (ZhdK) in Zürich and Co-Director of the Artists-in-Labs Program (a collaboration with the Ministry for Culture, Switzerland). She is also Vice Director of the Z-Node PHD program on art and science at the University of Plymouth, UK. Her recent publications include: *Artists-in-labs Processes of Inquiry*: 2006 Springer/Vienna/New York, and *Coded Characters* Hatje Cantz 2002, Ed. Marille Hahne. She has exhibited video artworks, conceptual performances and interactive environments in USA, Japan, Australia and Europe all based on the human body and the environment.

Shanken, Edward (us/nl) ■ 106, 451

Edward Shanken writes and teaches about the entwinement of art, science, and technology with a focus on interdisciplinary practices involving new media. He edited *Telematic Embrace: Visionary Theories of Art, Technology and Consciousness* (California, 2003) and authored *Art and Electronic Media* (Phaidon, 2009).

Skelton, Carl (de)

■ 497

Carl Skelton is professor and the founding director of the Brooklyn Experimental Media Center (BxmC), and the Integrated Digital Media programs of NYU's Polytechnic Institute. He is a media artist and worked on several publications about digital media.

Smoak, Harry (qc/ca)

■ 35

Harry Smoak is a media researcher and producer based in Montreal developing new forms of content in partnership with clients in areas of cultural production, architectural design, and entertainment. He is also a doctoral student and part-time faculty member in Fine Arts at Concordia University.

Song, Meehae (ca)

■ 338, 395

Meehae Song is currently a Ph.D. student at the School of Interactive Arts & Technology, Simon Fraser University. Song has been working with various VR applications from 2000. Her interests lie in exploring the uses of VR spaces for addressing issues of chronic pain and therapy.

Sonntag, Jan-Peter E.R. (de)

■ 346

Jan-Peter E.R. Sonntag is an artist focusing mainly on media art-based installations and theory. He studied fine arts, art history, music theory, composition, philosophy and cognitive science and, in 2002, founded "N-solab". He is a cofounder of "hARTware-projects", now "HMKV", "oh Ton" and "unerhört". He had several grants and participations in international exhibitions.

Sosa, Andrea (ar)

■ 340

Andrea Sosa was born in 1977. A graduate in Multimedia Design and Filmmaking, she is currently a Professor and Researcher at Universidad Nacional de la Plata and the Instituto Universitario Nacional del Arte. Her fields of work are interactive art and filmmaking. She lives and works in La Plata, Argentina.

Stermitz, Evelin (at)

■ 360

Evelin Stermitz graduated with an M.A. degree in media and new media art from the Academy of Fine Arts and Design, University of Ljubljana, Slovenia, and she is holding a master's degree in philosophy from media studies. Media and new media art works within poststructuralist feminist art practices.

Stern, Nathaniel (us)

■ 56, 311

Nathaniel Stern (USA/South Africa) is an experimental installation and video artist, net.artist, printmaker and writer. He recently completed his Ph.D. on interactive art and embodiment at Trinity College Dublin, and is currently Assistant Professor of Art at the University of Wisconsin, Milwaukee.

Szalai, András (hu)

■ 386

Andras Sly Szalai is a Hungarian Multimedia Hacker and Prototype Ninja, who likes to connect everyday objects to computers and remote control non-everyday objects with an ordinary mobile phone. He is an Artist and Interaction Designer who likes to build crazy installations for crazy people.

Szope, Dominika (de)

■ 288

Dominika Szope is a Ph.D. candidate at the University of Siegen. After studying art and media studies, her recent work focus has been on Web 2.0 social software applications and on the role of users and their capacity to act.

Taylor, Sarah (gb)

■ 375

Sarah Taylor is Reader within the School of Architecture & Design at the University of Brighton. Her areas of enquiry have pioneered the creation of light-emitting textiles which exploit the visual and mechanical properties of optical fibres as interactive, multisensory textile-based artwork.

Teschke, Thorsten (de)

■ 497

Thorsten Teschke is Professor for Computer Science in the Center for Informatics and Mediatechnology at the University of Applied Sciences Bremen.

Thayer, Pall (is)

■ 121

Pall Thayer is an Icelandic artist who has been active in the electronic and digital arts for over 10 years. He studied visual arts at the Icelandic Academy of the Arts and Concordia University in Montreal, Canada. He is currently employed at SUNY Purchase College in New York.

Thomas, Paul (gb/au), 451

■ 451

Paul Thomas is an artist working with nanotechnology and Associate Professor, College of fine Art, University of New South Wales. Founder of Collaborative Research in Art, Science and Humanity (CRASH) within the School of Design and Art at Curtin University and BEAP, the Biennial of Electronic Arts, Perth.

Torres, Ricardo (pt)

■ 481

Ricardo Torres is a Sociologist at Lisbon University Institute, researcher at Centre for Research in Anthropology, focuses Art, Internet, and Social Movements, trying to understand a new world with new strategies and social organization. Ph.D. student in Technology and Social Movements, supervised by Tom R. Burns.

Tremmel, Georg (at/jp)

■ 236

Georg Tremmel studied Visual Media Art in Vienna and Interaction Design at the RCA.

Troge, Thomas A. (de) ■ 460
Thomas A. Troge is since 1993 professor for music informatics at the University of Music Karlsruhe. Since 2005 Thomas Troge is director in the institute for music science and music informatics.

Úlfarsson, Halldór (is) ■ 98
Halldór Úlfarsson is an artist working with installation, video, performance and other media. He is interested in the meaning of making art and how this act stands in relation to other human endeavors. Halldór was educated at the Finnish Academy of Fine Art and the University of Art and Design, Helsinki.

Veenstra, Peter (nl) ■ 466
Peter Veenstra is one of the directors of Lola landscape architects, based in Rotterdam (NL). Lola researches and designs new spatial phenomena in public space.

Vissers, Rony (nl) ■ 149
Rony Vissers coordinates since January 2009 PACKED vzw. Platform for the Archiving and Preservation of Audiovisual Arts, a collaboration between argos – centre for arts and media (Brussels), eDAVID (expertise centre for digital archiving), SMAK (Ghent), MuHKA (Antwerp) and MDD (Deurle).

Voropai, Lioudmila (ru) ■ 90
Lioudmila Voropai is a Russian independent curator, art critic and researcher in media art. Currently she is enrolled in a Ph.D. program at the Academy of Media Arts (KHM) in Cologne and accomplishes her doctoral thesis about an impact of cultural policy on the institutionalisation of media art.

Vrachliotis, Georg (de/ch) ■ 85
Dr. Georg Vrachliotis – Academic assistant at the Institute for the History and Theory of Architecture at the ETH Zürich, and guest lecturer in architectural theory at the Institute of Architectural Theory of Vienna University of Technology. He is the co-editor of Context Architecture. Fundamental Concepts between Art, Science and Technology. www.gta.arch.ethz.ch/personen/georg-vrachliotis/curriculum

Vrtačić, Eva (si) ■ 212
Eva Vrtačić is an assistant researcher at Academy of Theatre, Radio, Film and Television (University of Ljubljana). Her interests include performance philosophy, theory of the subject vs. digital technologies and performance art. She has published several articles and a book on serial killers.

Wagner, Monika (de) ■ 77
Monika Wagner is professor of art history at Hamburg University, was chair of the Funkkolleg Moderne Kunst, fellow at the Wissenschaftskolleg zu Berlin. Major fields of research: fine arts since 1800, history of perception, iconography of materials (Das Material der Kunst. Eine andere Geschichte der Moderne, 2001. Lexikon der künstlerischen Materials, ed. with D. Rübél, S. Hackenschmidt), 2002. www.uni-hamburg.de/Kunstgeschichte/Personal/wagner.html

Wallbank, James (gb) ■ 188
James Wallbank is an artist, free technology advocate, and CEO of Access Space, the UK's longest running free media lab. He hasn't bought any hardware or software for ten years. Now Access Space is developing a research hub investigating sustainable strategies for community digital empowerment.

Walton, Marion (za) ■ 70
Marion Walton is a senior lecturer in the Centre for Film and Media Studies at the University of Cape Town, South Africa. Her research confronts the issues of power and regulation of meaning for software users, particularly those in marginalized contexts.

Weber, Matthias (de) ■ 383
Matthias Weber finished his studies of computer science (Diplom) at the University of Bielefeld in 2003. He then worked as a research scientist at different research departments like the Institute for Informatics at the TU Freiberg or the ergonomics department of the Fraunhofer FKIE.

Wehrmann, Moritz (de) ■ 399
Moritz Wehrmann studies Media Art (MFA) at the Bauhaus-University Weimar. His points of interest are the links between information, space, and human cognition. In his works he explores and uses characteristics of various media and material.

Weibel, Peter (de/at) ■ 129
Peter Weibel is an artist, teacher, and art and media theorist. He has been head of the Centre for Art and Media (ZKM) in Karlsruhe since 1999. In addition to his artistic and curatorial work, he is known for his border-crossing between art and science.

Welzer, Harald (de) ■ 503
Harald is a sociologist and social psychologist. He is head of the Center for Interdisciplinary Memory Research in Essen and research professor for social psychology at the University of Witten-Herdecke. He works on memory cultures and the psychology of the holocaust and violence.

Whitby, Blay (gb)
■ 242

Dr. Blay Whitby is philosopher and ethicist concerned with the social impact of new and emerging technologies. Books and chapters include: "On Computable Morality", "Reflections on Artificial Intelligence: The Legal, Moral and Ethical Dimensions" and "Artificial Intelligence, A Beginner's Guide".

Wijers, Gaby (nl)
■ 149

Gaby Wijers is coordinator of collection, preservation and related research at the Netherlands Media Art Institute (NIMk), coordinated the project Preservation of Video Art in the Netherlands 2001-2003, participated in projects as 404 object not found, Inside Installation and GAMA.

Wilson, Andrew (gb)
■ 397

Andrew Wilson has used mobile phones for creative participation for 10 years. His work includes The Guardian's SMS poetry competition and City Poems in Leeds and Antwerp. He is a founder member of Thumbprint Co-operative, developing mobile technology for public participation and civic engagement.

Wimberley, Kaspar (de)
■ 256

Kaspar Wimberley works as an interventionist, performance researcher and experimental cartographer specialising in site-specific and site-responsive art. Projects are quietly subversive, playfully readjusting the narrative and appreciation of a particular activity or a given site.

Yoon, Joonsung (kr)
■ 217, 328, 487

Dr. Joonsung Yoon is professor at Soongsil University, College of IT, the Global School of Media.

Yuditskaya, Sofy (us)
■ 59

Sofy Yuditskaya is an interdisciplinary artist. She is currently studying for her masters of Professional Studies at the Interactive Telecommunications Program at ITP, and researching educational game design at the Games for Learning Institute in New York City.

Zannos, Ioannis (gr)
■ 458

Iannis Zannos has a background in music composition, ethnomusicology and Media Art. He has worked at the State Institute for Music Research (SIM) in Berlin, and at CREATE, UCSB. He is currently teaching Audio and Media Art at the Department of Audiovisual Arts of the Ionian University, Corfu.

Zheng, Wang (cn)
■ 380

Wang Zheng, born in 1978, in Nanjing, China. Wang Zheng is a digital interactive artist and teacher in Fine Art College of Shanghai University. His art work focuses around interactive installation such as human-computer interaction, and computer vision.

Ziegler, Chris (de)
■ 61

Chris Ziegler is media artist in international collaborations on new media with the performing arts. Interactive film installations and performances are presented internationally. He is "Associate Artist" at ZKM Karlsruhe and researcher for Inside Movement Knowledge Project at AHK Amsterdam.

Zielinski, Siegfried (de)
■ 296

Siegfried Zielinski holds the Media Theory chair at the Institute for time based media, University of Arts, Berlin. He teaches at MECAD in Barcelona, and at the European Graduate School (EGS) in Saas Fee, Switzerland, where he holds the Michel Foucault professorship. He is a member of the Academy of Arts Berlin and of the European Film Academy.