

Cybernetics Revisited – Towards a Third Order?

Proceeding of Abstracts

re-new festival of digital arts

interactive media art conference

copenhagen 2012

re-new
digital arts forum



LEONARDO
THE INTERNATIONAL SOCIETY FOR THE
ARTS, SCIENCES AND TECHNOLOGY



CITY OF COPENHAGEN

AALBORG UNIVERSITY

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Announcement by General Chairs

An art and research ecology

Interactive media art production is an amalgam of areas each with its specific expertise. If media art is produced and acquired, we may break this producing factor up into technology, science and artistic practices, taken in by an actively interacting audience. Each of these areas have a vast number of sub-areas, and their relations are in a constant flux as new technologies and methods emerge and existing ones are probed, transformed and fused. This rich mesh is the backdrop for interactive media art.

When combining an interactive media arts festival with a conference on the models and technologies that support it, re-new facilitates a critical, transdisciplinary dialogue.

Framing

Bringing together research and art requires new formats for exchange of experience and experiment. Theories are tested and practiced by the re-new festival's exhibition and performances and brought back to the research arena of conference sessions and workshops.

Possibilities

The integration of re-new and IMAC – festival and conference – seek to achieve a better integration between art, technology and science. The integration of art within technology and science provides insights that lie beyond the purely technical or theoretical stance, and moves the entire field of knowledge and production in a direction of social activism.

re-new and IMAC – reconfiguring the format of festivals and conferences

re-new and IMAC together emphasizes the relations between technology, science and art in education and society. The goals of the re-new and IMAC mix demand the integration of procedures that rely on methods and technologies in constant development. Thereby, the joint effort of re-new and IMAC is aiming at setting up a new stage for technologists, researchers, artists and an active audience to experience, confront, communicate and collaborate with each other. We want to provide a space for reflection and negotiation of these methods. Through IMAC we develop a methodology – a process – for handling the intersection between art, technology and science.

Lars Graugaard and Morten Søndergaard, General Chairs.

STATEMENT ON INTERMEDIA

Dick Higgins

Art is one of the ways that people communicate. It is difficult for me to imagine a serious person attacking any means of communication per se. Our real enemies are the ones who send us to die in pointless wars or to live lives which are reduced to drudgery, not the people who use other means of communication from those which we find most appropriate to the present situation. When these are attacked, a diversion has been established which only serves the interests of our real enemies.

However, due to the spread of mass literacy, to television and the transistor radio, our sensitivities have changed. The very complexity of this impact gives us a taste for simplicity, for an art which is based on the underlying images that an artist has always used to make his point. As with the cubists, we are asking for a new way of looking at things, but more totally, since we are more impatient and more anxious to go to the basic images. This explains the impact of Happenings, event pieces, mixed media films. We do not ask any more to speak magnificently of taking arms against a sea of troubles, we want to see it done. The art which most directly does this is the one which allows this immediacy, with a minimum of distractions.

STATEMENT ON ANOTHER FUTURE

Morten Søndergaard

Art is one of the ways people interact. It would be difficult to envision a life or culture without interaction. The image of such a life is fuzzy, dystopian even. Interaction is everywhere. It is converging on to and in to everything. But to achieve a purpose and engage in society we need to enhance our awareness about politics and culture. We need to challenge interactivity. We search for the roads less travelled by through the digital complexities, and crave for a layer of art, which can make us reflect upon human identity and biology in a society where everybody are their own archivists.

(Rarely, someone mentions the pointless wars we are fighting). We need technological sensitivity and cybernetic sensibility. Practice - within science and art - is a method to achieve this.

Cybernetic is a form of life. We are feeding our private images back into the history of images, looking for immediacy in the interactive moment of media.

What if we take Andrew Pickering's arguments further into the interactive media art field and

Goodness only knows how the spread of psychedelic means, tastes, and insights will speed up this process. My own conjecture is that it will not change anything, only intensify a trend which is already there.

For the last ten years or so, artists have changed their media to suit this situation, to the point where the media have broken down in their traditional forms, and have become merely puristic points of reference. The idea has arisen, as if by spontaneous combustion throughout the entire world, that these points are arbitrary and only useful as critical tools, in saying that such-and-such a work is basically musical, but also poetry. This is the intermedial approach, to emphasize the dialectic between the media. A composer is a dead man unless he composes for all the media and for his world.

Does it not stand to reason, therefore, that having discovered the intermedia (which was, perhaps, only possible through approaching them by formal, even abstract means), the central problem is now not only the new formal one of learning to use them, but the new and more social one of what to use them for? Having discovered tools with an immediate impact, for what are we going to use them? If we assume, unlike McLuhan and others who have shed some light on the problem up until now, that there are dangerous forces at work in our world, isn't it appropriate to ally ourselves against these, and to use what we really care

investigate the status of cybernetics today in art, technology and science?

What levels of 'order' and systematic communication enter into the trans-disciplinary artistic, technological and scientific set-up of present-day cross-domain laboratories, and practice-based theoretical production and experiments?

Cybernetics enhances the media consciousness of artists in the 60s by creating strong images of technological production and reproduction.

For the last 20 years or so, artists have changed their use of media in many directions leaving behind a scattered, if not exploded, field of 'art'. The puristic discourses are strong and tempting those who want to avoid interaction all together. But puristic discourses are not even useful as critical tools. The non-puristic art practices create situations where human contact and dialogue are being mediated.

Today, we have a habit of revisiting the images operating behind intermedia. Those images, we claim, belong to Cybernetics.

We believe that it possible to look at the history of cybernetics as something that provides us with 'an imaginative model of open-ended experimentation in stark opposition to the modern

about and love or hate as the new subject matter in our work? Could it be that the central problem of the next ten years or so, for all artists in all possible forms, is going to be less the still further discovery of new media and intermedia, but of the new discovery of ways to use what we care about both appropriately and explicitly?

The old adage was never so true as now, that saying a thing is so don't make it so. Simply talking about Viet Nam or the crisis in our Labor movements is no guarantee against sterility. We must find the ways to say what has to be said in the light of our new means of communicating. For this we will need new rostrums, organizations, criteria, sources of information. There is a great deal for us to do, perhaps more than ever. But we must now take the first steps.

[Dick Higgins](#)

New York

August 3, 1966

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TyposVerlag, Frankfurt - Something Else Press, New York, July 1967

urge to achieve domination over nature and each other' (Pickering, 2011)

We do not inhabit the now of our culture but envy the energy of the past and make sketches for another future.

We need to develop different formats, find alternative places, go in-between places, be places, communicate and interact differently.

Art and science, practice and theory, brain and body - dualities we need to break with and reconfigure.

We must now take a step towards the third order... and another future.

Morten Søndergaard

Copenhagen

October 14, 2012

Keynotes

Lanfranco Aceti

Who Terminated the Cyborg?

The Normalization of Cybernetics, the Loss of Revolutionary Powers and the Rise of the Bureaucrat

What remains of the revolutionary value of the cyborg? Donna Haraway's vision that the cyborg would bring a new dawn, challenging the capitalistic, militaristic and patriarchal structures of contemporary society has not come to fruition. Is the failure of the revolutionary potential of technology (as a community and rhizomic force) allowing the cyborg to be subsumed and reined in by those very capitalistic, militaristic and patriarchal social hierarchies?

Rethinking the role that the cyborg and cyborgology play within contemporary society requires an analysis of the realities of the 21st century, beyond the ideological positioning and posturing of Cartesian dualistic approaches. Is there a third order, or any new order for that matter, that by moving beyond the established realities can offer an alternative to the reduction of the cyborg to a mass-marketable aesthetic and to a purchasable and downloadable series of upgrades? The lack of revolutionary value in current cyborgology stems from the fact that the 'cyborg revolution' is now offered by a global corporate world and presented as the latest fashionable tech gear. In this socio-political context, what remains of the initial vision of the cyborg are innovative new forms of enslavement and servitude that control the biomechanical parts of the body.

In this context the liberating contribution of the cyborg is nothing more than a controlled societal participation. The cyborg as a disruptive and innovative force no longer exists and with the loss of its revolutionary power comes the rise of the cyborg in a new 'fashion,' that of the bureaucrat.



Lanfranco Aceti (PhD) is Currently Editor in Chief at Leonardo Electronic Almanac, visiting professor at Goldsmiths, and Artistic Director of ISEA2011 Istanbul.

Has previously worked at The Victoria and Albert Museum, Birkbeck College, University of London, The Slade School of Fine Art, University College London, and University of London

Andrew Pickering

Art & Agency

Presenting the abstract for his keynote, Pickering writes: I would like to come at art from a new angle, to add something to our ways of thinking about and making art. I want to give an ontological reading of several classes of artworks; I want to conjure them up as ontological theatre.

Ontology is about questions of what the world is like, and I begin by briefly rehearsing some conclusions from recent work in science and technology studies. The sciences themselves paint us a picture of the world as dualistically split between the human and the nonhuman, a world in which humans are the only genuine agents, in command of machine-like, knowable and predictable nonhumans; but studies of scientific practice offer us a different image of life in the thick of things; of a posthumanist decentring of humans and nonhumans at the level of performance; and of the world as a place of becoming and the continuous emergence of the new. I call this a Taoist ontology. Traditional Chinese philosophy got it right; decentred becoming—that is how the world is; though this is veiled from us by the stories the modern sciences tell; the sciences have it wrong.

I move from that to an ontological reading of cybernetics, picking out threads that point to a non-modern vision of the world as ultimately unknowable, and discussing some of the real-world projects that acted that vision out. My examples here run from brain science and robotics to the anti-psychiatry movement, and the pivot to art comes in a consideration of cybernetic artworks. I then widen the frame to embrace an otherwise heterogeneous spectrum of artworks that variously thematise nonhuman agency, the coupling of human and nonhuman agency, and, indeed, transformations of the human evoked by material technologies of the self. I think of this work as exemplifying a sort of agency realism, in contrast to the representational realism of the Western tradition; as acting out and performing an understanding of how things go in the world, rather mimicking what they look like. This reading – as ontological theatre – is what I want to add to the works in question.

In conclusion we can go in several directions. One would be to make connections back to traditional Chinese philosophy and art (bonsai, rocks). Another would be to venture into the politics of ontology and how understandings of what the world is like hang together with specific patterns of action. This, in turn, could shade into a discussion of environments: artworks as themselves micro-environments and what they suggest for ways of conducting ourselves in the macro-environment: other people, nature, civil engineering.



Andrew Pickering is internationally known as a leader in the field of science and technology studies. He is the author of 'Constructing Quarks: A Sociological History of Particle Physics,' 'The Mangle of Practice: Time, Agency and Science' and 'Kybernetik und Neue Ontologien,' and he is the editor of several collections of research essays, including 'Science as Practice and Culture' and (with Keith Guzik) 'The Mangle in Practice: Science, Society and Becoming.' He has written on topics as diverse as

post-World War II particle physics; mathematics, science and industry in the 19th-century; and science, technology and warfare in and since WWII. His most recent work has focussed on the history of cybernetics in Britain, and his latest book, 'The Cybernetic Brain: Sketches of Another Future' was published in 2010. The book analyses cybernetics as a distinctive form of life spanning brain science, psychiatry, robotics, the theory of complex systems, management, politics, the arts, education, spirituality and the 1960s counterculture, and argues that cybernetics offers a promising alternative to currently hegemonic cultural formations. His current research focusses on contemporary artworks that thematise the agency of matter and the construction of the human self. Pickering has held fellowships at MIT, the Institute for Advanced Study at Princeton, Princeton University, the Guggenheim Foundation, the Center for Advanced Study in the Behavioral Sciences at Stanford and, most recently, Institutes for Advanced Study at the Universities of Durham and Konstanz. With PhDs in physics (London) and science studies (Edinburgh) he moved from Britain to the United States in 1984, and was for many years professor of sociology and director of an interdisciplinary STS graduate programme at the University of Illinois at Urbana-Champaign, before moving to the University of Exeter in 2007.

Roy Ascott

Centrifugal Cybernetics: Art as Organism

Whereas, since the Enlightenment, the isolated, solitary self had been a feature of western culture, and the mind's capacity for managing identity was socially constrained, we can see a generative self emerging from mind in its creative search for variety. As private paranoia is erased by social telenoia, a hypercortex may be seen to evolve, and access to the field of consciousness deepening: the single-self organism is transforming into the multiple self.

As we acquire a more syncretic sensibility and a faculty of cyberception, our use of technoetic systems and moistmedia allow us to move seamlessly through a variable reality, whereas, until very recently, our dominant ontology divided the experience of the world out into separate states of being - the real, the artificial, the virtual - each construed as impermeable worlds and discrete domains.

In this variable reality, immaterial connectedness defines both quantum reality and the spiritual domain; interactive digital media parallel psychoactive chemical technology; the centrifugal architecture of the organism defies the centripetal forces of State and Market. And in the realm of biophysics, it may be more than simply poetic to see the biophotonic information network of the body paralleling the telematic flows of electrons and photons across the planet.

I shall trace the conjunction and convergence of these cultural tendencies through my own work in art and in education, from its roots in cybernetics towards its future foliage, through its formative metaphor of the organism.



Roy Ascott has shown at the Venice Biennale, V2, Milan Triennale, Biennale do Mercosul Brazil, European Media Festival, Musée d'Art Moderne, Paris, etc. Progenitor of Telematic Art, his seminal projects include La Plissure du Texte at Electra, Paris 1984, (, and Aspects of Gaia Ars Electronica, 1989. Retrospective exhibitions of his work have recently been shown at Plymouth Arts Centre, the Incheon International Digital Art Festival, Korea, and at SPACE Studios in London. Roy Ascott: Syncretic Cybernetics is part of the Shanghai Biennale 2012. He is Founding President of the Planetary Collegium, and the DeTao Master of Technoetic Arts at the Beijing DeTao Masters Academy in Shanghai. He is an Honorary Professor of Aalborg University, Copenhagen, and of the University of West London. In 1960s he established the radical Groundcourse in London and Ipswich, and taught at the Slade, Saint Martins and the Central Schools of Art. In the 1970s he was President of Ontario College of Art, Toronto, and later Vice-President of San Francisco Art Institute. He was Professor of Communications Theory, University of Applied Arts, Vienna, in the 1980s, and University of Wales Professor of Interactive Arts in the 1990s. He is a graduate of King's College, University of Durham. He edits Technoetic Arts (Intellect), and is Honorary Editor of Leonardo (MIT Press). His books include: The Future is Now: Art, Technology, and Consciousness, Gold Wall Press, Beijing, 2012; Telematic Embrace: Visionary Theories of Art Technology and Consciousness, University of California Press, 2003. Technoetic Arts. Yonsei University Press, 2002. Art & Telematics: toward the Construction of New Aesthetics, NTT, Tokyo, 1998. He advises new media centres, festivals and juries throughout Europe, Australia, Brazil, Canada, China, Japan, Korea, the USA, CEC and UNESCO.

LEAF Workshop - Developing Cloud Curricula in Art and Science

'So what would a "Art Science Cloud Curriculum" be in the face of networked culture?'

The Leonardo Education and Arts Forum (a working group of Leonardo ® /ISAST), Art Science Cloud Curricula workshop will generate and build an internationally recognised and Leonardo endorsed art and science cloud curriculum course outline. The workshop outcome would be a curriculum that could become a benchmark of what we see as quintessentially important to engage in the world of research at the core of Art/Science.

This workshop established in collaboration with the research being developed for the Science, Engineering, Art and Design [SEAD](#) curriculum white paper and STEAM. The proposed workshop would be able to define and construct an actual sample curriculum that would be placed on an art science cloud wiki.

The workshop would encourage contemporary scholars, artists, scientists and theorist in the area of art and science to discuss, suggest and create the aims, attributes, readers and course work that should be undertaken to produce a fundamental set of considerations that would enable students to engage in the world of art and science.

The workshop would utilize contemporary networked technologies to build the curriculum in real-time that would become the foundation of an art and science cloud curriculum wiki. The project aims to use the wiki to affect a shift in the perception of art and science students and staff toward an understanding of new paradigms of research and learning that challenge and transcend disciplinary boundaries. The curriculum will privilege metacognitive interrogation of content and (re)visioning of traditional disciplinary research methodologies using a syncretic integration of heuristic and practice-based inquiry.

The workshops will build on previous [Leonardo Education and Art Forum: Transdisciplinary Visual Arts, Science & Technology Renewal Post-New Media Assimilation workshop](#) held in 2011.

'Somehow the "Art-Science Cloud Curriculum" needs to respond to the new realities of the evolving organization of research and knowledge. It may be that universities are mal-adapted to evolve to the new situation; the whole diploma structure (BSc, MA, MFA, PhD) was designed for a world that no longer exists; even the new distance learning and on-line institutions such as the Kahn Academy are a premature response that will be overtaken by new systems. If a student really wants access to the best education that addresses the STEAM vision, that allows for multiple educational "pathways" through science, engineering, arts and humanities, maybe we need a 'serious game' environment that summons at the appropriate time the best teacher or mentor on the planet for the problem at hand, that mobilises collective group learning technologies of massive collaborative games, that matches budget to the best educational opportunities, that optimizes 'blended learning' approaches to combine face to face time, on line collaboration time and access to distant learning resources'. Roger F Malina

Workshop Chairs: Paul Thomas, Leonardo Education and Art Forum: International Liaison & Morten Søndergaard, University of Aalborg, Denmark.

List of Artworks

Installations and Urban Projects

Stress-o-stat (Documented & Debated)	Howard Boland	howard@c-lab.co.uk
Error 404 502 410	Marcelina Wellmer	mwellmer@googlemail.com
Indeterminate Hikes+	Cary Peppermint and Leila Christine Nadir	lcnadir@gmail.com
ERVAX for 2	Simon Nielsen and Anders Monrad	amonrad@hotmail.com
unCloud	Rui Guerra	rui@intk.com
Color Occurrence	Ann Oren and Zevan Rosser	annoren@gmail.com
Fabled Eye Accommodates Revelation	Paul Goodfellow	paul.goodfellow@northumbria.ac.uk
Soulmates	Andreas Busk-Jepsen and Lasse Thorning	oevboev@gmail.com

Performances and Concerts

Allegoria	Bernardo VerCELLi	bernardovercelli@quietensemble.com
Improvised Interactions	Andrew Brown	andrew.r.brown@griffith.edu.au
Fluxus	Hans Peter Stubbe Teglbjaerg	stubbe@post.nordit.dk
Ephemeron	Phivos-Angelos Kollias	soklamon@yahoo.gr
Echo Moiré: Sonic Vehicles	Matteo Marangoni	

Installations and Urban Projects

HOWARD BOLAND - Stress-o-stat

Stress-o-stat is a living artwork. It visually captures stress in bacteria as light. The life-size installation combines scientific instruments, methods and aesthetics to produce a real and speculative device. The work employs a fermentation setup called chemo stat. It consists of pumps, tubes, vessels and monitoring parts. All connected to maintain homeostasis in cell population. The machine is both hosting and feeding the bacteria. A special genetic switch involved in stress response was located and combined into a genetic construct to produce fluorescing proteins. Once implemented in bacteria these proteins are expressed during oxidative stress producing a yellow-green colour in response to blue light.

The work explores convergence between life and machine. The machine controlling the bacteria becomes life-like and the bacteria, engineered through synthetic biology, become machine-like. Stress-o-stat deliberately associates itself with domestic devices such as thermometers and barometers but actually deliberates ideas of using our senses to explore other worlds normally inaccessible to our senses. The work is a result of an immersive and independent laboratory practice using synthetic biology in the aim of developing new types of artistic expressions.

HOWARD BOLAND is co-founder and artistic director of C-LAB and an artist working with Synthetic Biology. His research focuses the use of standardised genetic parts using the MIT bio bricks library through an immersive laboratory based practice. Currently, his PhD (funded by the AHRC and the University of Westminster) titled "Art from Synthetic Biology" combines synthetic biology and art to produce novel visual expressions in bacteria. The research is situated at The Centre for Research and Education in Arts and Media (CREAM) and daily practice at the School of Life Sciences working independently and alongside science researchers. He has degrees in Mathematics (University of Oslo), Software Systems for the Arts & Media and has a Masters in Digital Practices with Distinction (University of Hertfordshire). Howard has taught and worked extensively with award winning interactive productions (e.g. Cannes Lions) for clients such as HSBC, Vodafone, Sony, V&A and Microsoft. His strong professional involvement with the creative industry include heading up interactive digital teams for major agencies. The work crosses highly technical activities and liaising client services. Recent activities include exhibiting living synthetic biology artworks (Stress-o-stat and Banana Bacteria) at Techfest 2012, Mumbai, India and curating public art exhibitions for the EU funded European Public Art Centre - EPAC (2010-2012), the first Europe-wide contemporary art venue resulting in 16 exhibitions across 9 countries on art, science and society.

MARCELINA WELLMER - Error 404 502 410

Error 404 502 410 is a generative sound installation based on the phenomenon of a server error. 3 customized hard disks exposed on the wall each with an embedded microphone, amplify a hard disk error or failure. The rarely noticed sounds, which accompany hard disk errors or connection failures, are normally not perceived terms of aesthetics. The installation reveals the audio qualities of technical damages and presents them as audible aesthetics.

In the PC housings the disks turn on an endless loop, their rhythm is disrupted by a randomness factor. The letters engraved on the surface of the disks refers to the error code: 404 - "Not Found", 502 - "Bad Gateway", 410 - "Gone". These are the names of the particular errors that make the loop stumble, readable only when the disk stops. This paradox, that attempting to access the information about the work, we lose contact with it, and while experiencing the work, we become unable to read the text. This cognitive dissonance is derived from a reflection on an error as one of the most immanent features of a computer as a cultural machine. If software is a set of formal instructions prepared for a computer to follow and fulfil, this work negates the software functionality.

MARCELINA WELLMER is a Berlin-based artist born in Poland and graduated with a diploma in Video and Drawing from the Academy of Fine Arts, Poznan/Poland. Her works are dealing with the relation of human's and architecture and with the interference of information and media, crossing the border between analogue and digital. Working with the reuse of lost and recovered data files and old IT hardware, her works often concerns those random found materials, which she often uses combined with randomness - a key element of her creation.

LEILA CHRISTINE NADIR & CARY PEPPERMINT - Indeterminate Hikes+

The borders between what is 'urban' and what is 'rural' are shifting, as concepts like 'nature' and 'culture' progressively fuse. By 2030, approximately 60% of the global population will live in urban space. Clearly the line between where humankind exists, and where it does not, needs reframing. Indeterminate Hikes+ responds to this fusion, this blurring, this collaboration - projecting natural landscapes onto the urban landscape.

Indeterminate Hikes+ is a mobile phone app that transforms everyday landscapes into sites of bio-cultural diversity and wild happenings, and the *bascamp.exe* installation psychically prepares hikers for IH+ wilderness excursions. Most of us use our smartphones as instruments of rapid communication and consumerism. IH+ re-appropriates this technology as a tool of environmental imagination and meditative wonder, renewing awareness of the places we inhabit and slowing us down at the same time. The app imports the experience of wilderness into virtually any place accessible by Google Maps, encouraging its participants to treat these locales as spaces worthy of the attention usually accorded only to nature, such as canyons and waterfalls.

LEILA CHRISTINE NADIR AND CARY PEPPERMINT founded 'ecoarttech' in 2005 to explore modern ecological being amidst networked environments, from biological systems to digital networks. Merging primitive with emergent technologies, ecoarttech's work investigates the overlapping terrain between "nature," built environments, mobility, and electronic spaces. Between the two of them, Leila and Cary's research has been awarded a New York Foundation for the Arts Digital/Electronic Arts Fellowship, New York State Council on the Arts Media Arts Grant, Mellon Post-Doctoral Fellowship, and Franklin Furnace Performance Grant.

ANDERS MONRAD & SIMON NIELSEN - *Ervax for 2*

Earwax for 2 is a videogame with adaptive music parts. The Game is a quirky mixture of retro, arcade videogame-aesthetics and serial/60's avant-garde music aesthetics: *Nanarrow* meets *Space Invader*.

It is an interactive art installation in the form of a frame from an arcade game installation from the eighties and a highly contemporary interactive set up. The installation will be placed in a dark room where it lights up and attracts the viewers to take part in the spectacular game.

It is partly videogame and partly a generative music application, that works from direct interaction with two players.

The two players have the possibility to create their own unique musical realization of "ERVAX for 2" from playing the game.

ANDERS MONRAD is a Danish composer, pianist and painter. Monrad received an undergraduate degree in musicology and economics from Copenhagen University and Business School in 2006. In July 2011, he completed a Masters degree in composition at the Royal Danish Academy of Music in Copenhagen. From 2009-2010 Monrad did a post-graduate year in at The Royal Academy of Music in London.

SIMON NIELSEN

Simon Nielsen is an independent computer games professional
(Her mangles lige lidt bio, kommer snarest)

RUI GUERRA & DAVID JONAS - unCloud

The network is a place of exchange, politics and creative energies - where the ways ideas circulate and are exchanged intermingle in media and become media. Networks of disruption become institutionalised and corporatized, as the hegemonic cycle of distribution and 'coolness' spins another loop. Artistic exit strategies are needed, unCloud is a prime example.

unCloud is an application that enables anyone with a laptop to create an open wireless network and distribute their own information. Once it is launched, a passer-by using a mobile Internet device can connect to this open wireless network. The person running the application can decide what information is shown in any web address. Users can access information wirelessly while at the same time remain disconnected from the Internet. unCloud does not depend on a remote datacentre, instead it can be run from a laptop, making it an ideal application to run in a train or at a café.

RUI GUERRA is involved in open culture with a critical view on communities. Besides teaching at The Royal Academy of Art in The Hague he co-founded INTK, an interdisciplinary group of artists, designers and software developers that research and develop critical interventions that reflect on art, technology and society. Being a critical open cultures advocate, Rui Guerra has developed a number of models, self-organising principles and strategies for shifting culture online, and what to do with it once it's there. His work questions and challenges the norms and hierarchies of 'high-end' cultural institutions and suggests that the time has come to reflect the true economic and political value of online culture within governmental policy. His work has been exhibited in several art festivals and he has collaborated with several institutions such as V2_: Institute for Unstable Media, Piet Zwart Institute both in Rotterdam (NL), Arnolfini in Bristol (UK), LABoral in Gijon (ES) and STUK in Leuven (BE).

DAVID JONAS graduated in computer science engineering from Instituto Superior de Engenharia and advanced piano training at CAIU both in Porto, Portugal. He has worked on several new media art projects as a freelancer and as part of V2_, Institute for the Unstable Media. He currently works as media artist and software developer at INTK.

ANN OREN & ZEVAN ROSSER - Color Occurrence

Color Occurrence is an interactive and participatory media art piece, which is constructed out of colors named by online contributors worldwide. An emergent text work is linking color as it is interpreted in spoken language with Twitter.

When you write on the Color Occurrence website you can connect and associate a word or phrase with a color of your own choice. The color database becomes a personal, current, "spoken language", and color library. The project selects at random a color name from the database, when a color is selected, a Twitter search is performed for tweets containing this color name and the tweets are displayed, generating a cross among international cyber communities.

The work will be displayed in the Rotunda with large-scale colorful projections and the audience will be able to interact with the piece online from all over the world or directly in real time by the installation from a computer connected to Color Occurrence database.

ANN OREN is born in Tel-Aviv, lives and works in Brooklyn. Received a BFA in Film & Video and an MFA in Fine Arts both from the School of Visual Arts. Her work has been shown in the Anthology film Archive, The Hammer Museum, LA, The Tel-Aviv Museum of Art, WRO Art Center, Wroclaw, Poland, 2nd Moscow Biennale of Young Art, Moscow, PS,1 NYC, Taller Boricua, NY, 4CULTURE, Seattle, MediaLab Prado, Madrid, The Armory, Pasedena and APEXART, NY. Grants from The Jerome Foundation, The Visual Arts Fund, The School of Visual Arts, and the National Board of Reviews, NYC.

ZEVAN ROSSER

Zevan Rosser is a computer artist and programmer. He works as a freelance designer, programmer and consultant for design firms and Ad agencies in NYC.

Rosser is a professor of Computer Art at The School of Visual Arts, NYC.

PAUL GOODFELLOW - Fabled Eye Accommodates Revelation

FABLED EYE ACCOMMODATES REVELATION is an art system that highlights the combinatory possibilities of language in 'digital systems', and our collusion in such distributed literal systems in society, (such as Google). It questions the ascendancy of the image by contrasting screen-based outputs and hand screen-printed outputs from the system. This piece directly confronts Marshall McLuhan's idea of "The medium is the message" in the sense that the form of a medium embeds itself in the message, creating a symbiotic relationship by which the medium influences how the message is perceived.

Paul Goodfellow is interested in how the viewer's response to communication, transported through text and phrases, is mediated by the medium. Exploring this, he will present and compare a computer that randomly generates phrases in real-time with a set of screen-printed prints of phrases that were randomly generated, using the same computer algorithm. The physical quality of the screen-printed work and a challenging palette of colours have the potential to act as visual interference to the message.

PAUL GOODFELLOW is an artist-designer and animator. He is Programme Leader of the Motion Graphics and Animation BA degree and Senior Lecturer in visual communication, interaction and animation at Northumbria University, UK. With a background in Design, Science and Art, Paul is interested in the intersections of these disciplines, and how aesthetic decisions are made in complex systems. He has a particular interest in the aesthetic and ambient representation of information. He has worked in film and television, designing motion graphics, digital visual effects, and animation.

ANDREAS BUSK & LASSE THORNING - Soulmates

UVB-76 is an enigmatic Russian short-wave radio station. It sends out a tone 30 times per minute. It has done this since 1982. Nobody knows why! Soulmates is a sound installation that encapsulates its audiences in darkness and sound.

The total darkness of the installation plays with human perception and by removing light from the installation environment creates a frameless and infinite space, where consciousness is filled with electronic soundscapes and poetry that emerges with recordings of the Russian short-wave radio station UVB-76.

ANDREAS BUSK is a master's student in electronic music composition from the education of 'Tonespace' at The Southern Academy of Music and Dramatic Arts, Denmark. Currently he is working on the borderline between alternative electronic music and sound art mainly focusing on combining electronic music and artistic possibilities inspired from his interest in street art, art philosophy, and electronic music programming. Andreas is a member of the Danish Composers' Society and composes in all genres with the base of the computer. Recently he has been represented in a variety of places from the DEFINE festival in Alsion, to Tonespace Festival in Esbjerg and Natsværmeren' on the Danish national broadcasting radio station P2.

LASSE THORNING had his debut as a poet in 2011 with 'Sådan og sådan' ('Like that and Like that') - a collection of poems dancing around tensions, memories, physical impossibilities, nerves and feelings. Lasse has been active in a large number of spoken word projects, and is today working with the combination of words and sound. In October 2011 Lasse presented a new electro-poetry at Y2Kx+1 Live Looping Festival in Santa Cruz, California. Also he is co-founder of Piip poetry i/s, which founded the stage for poetry slam in Copenhagen.

Performances and Concerts

QUIET ENSEMBLE / FABIO DI SALVO AND BERNARDO VERCELLI - *Allegoria*

Just as music can be considered as the art and science of sound over time, in *Allegoria* the man's body becomes the sound object that generates music. *Allegoria* is performed as a classical concert by a string quartet playing a piece by Johann Sebastian Bach. By mixing alternative sounds and unexpected noises with the music from the string quartet, *Allegoria* points out the nature of origin, presenting the audience for a performance combining the sounds of the interaction between bodies and objects with inaudible sounds generated by the electric energy passing through a string quartets moving bodies while they play. With a special recording technique, breathing and heartbeats becomes audible. Now the sounds of the bodily movement and the sounds of strings turn into a musical composition evolving to the complete revelation of the music of the bodies. *Allegoria* intends to create a dense and complex sound strata, where different layers of the audible subjects are revealed, stimulating our slightly dormant awareness, awakening the consciousness of the world that are usually ignored, by giving voice to the teeming of life hidden behind the apparent immobility of forms. During the performance, the musicians become a symbol, emphasizing the allegorical figure of their own image/figure, while the allegorical image of the concert aims to stimulate the viewer's attention to "concerts" representing the essence of the reality that surrounds us.

QUIET ENSEMBLE is a meeting between FABIO DI SALVO and BERNARDO VERCELLI. The research of Quiet ensemble goes through the observation of the balance between chaos and control, nature and technology, creating subjects that perfectly merges the elements that take form from the relation of organic and artificial subjects, moving the attention to insignificant and wonderful elements, like the movement of a fly or the sound of trees. The interest is connected to those technologies that explore the aesthetic and conceptual possibilities deriving from interactivity techniques, approaching the newest technological discoveries as if they would be the tools for creation, like the brush for the painter. Working on the relation between time and space, sound and image the work of Quiet ensemble changes and develops in time, relating to the space changing it. Emphasizing the unexpected events, refuting the apparent immobility of shapes and melting the appearing opposition of forces in nature.

ANDREW BROWN - Improvised Interactions

Andrew Brown uses live coding to explore the expressive opportunities of a musical agency shared between human and computer system. The live coding context provides for performative creation and manipulation of both direct sonic expressions and semi-autonomous algorithmic music processes. Andrew interacts through a programming language description that is enhanced by accelerometer and touch screen gestural controls so that embodied gesture also can control the improvised algorithmic constructions.

Live coding of music is a very abstract representational activity that relies on succinct and expressive description of musical and sonic processes. It embraces a new model of interactive meta-score as the description in code of computational agents takes the end result beyond traditional score-based representations. And since this structural work happens in real-time it blurs the distinctions between the traditional roles of performer and composer, and possibly even those of the instrument builder.

The performance can be seen as a 'double duet'; on the one hand it is duet between a musician and the computer, but can also be seen as a duet with oneself and the mirror reflection of personal generative designs. And given that all sonic material derives from the computer system, one could argue that there is no human voice at all, only a mediated one which gives a kind of duet between the present and the absent.

ANDREW BROWN is an active computational artist working in music and visual domains. He is Professor of Digital Arts at the Queensland Conservatorium of Music, Griffith University, in Brisbane, Australia where his work explores the aesthetics of process and often involves programming of software as part of the creative process. In addition to a history of computer-assisted composition and rendered animations, Andrew has in recent years focused on real-time art works using generative processes and musical live-coding where the software to generate a work is written as part of the performance. He has performed live coding around Australia and internationally including in London, Copenhagen, and Boston. His digital media art work has been shown in galleries in Australia and China. For more information and examples of previous work visit <http://andrewrbrown.net.au>

HANS PETER STUBBE TEGLBJAERG & TORBEN SNEKKESTAND - Fluxus

Fluxus is a collaborative act between electronic composer and instrumentalist Hans Peter Stubbe Teglbjaerg and saxophonist Torben Snekkestad. It is a performance that explores the potential of a new instrumentality in the frame of real time physical modelling.

This performance strives to establish a perceptive condition, where the musical style balances between an enclosed composition and a more liberated improvisation. Thereby introducing a meeting between a structured time and the freedom of expression. It can be described as a move into the borders of sound, on the verge of music in which emptiness reigns. In here the sound actions are the impetus for discursive attempts to reach for new land. Teglbjaerg and Snekkestad join each other in a collaborative expression, where improvisation and composition merges, where a new aesthetic balance of freedom of expression and formal consciousness may be reached. For further information and examples of previous work visit <http://www.mediafire.com/?2aazjn89w4ckpvf>

HANS PETER STUBBE TEGLBJAERG was born in Denmark 1963 and brought into to a home with a vivid interest in art and music. Teglbjaerg studied instrumental and electronic composition at the Royal Danish Academy of Music in Copenhagen. In addition to this he complemented his degree with a study in computer composition at the Institute voor Sonologie in The Hague and at IRCAM in Paris, which also allowed for him to act as a researcher and an instructor. Teglbjaergs interest lies in the physical/acoustic nature of the instruments, as well as the phenomenology of natural sounds.

TORBEN SNEKKESTAND was born in Norway in 1973. He is originally classical educated with his main instrument being the saxophone, however he has dedicated a great deal of his musical contributions to contemporary and improvisational music. This pursuit has among many other genres and forms led him to jazz music in which context he has premiered numerous of works. Snekkestad is the soprano-saxophonist of the Copenhagen Saxophone Quartet, which is known for being one of the most prominent chamber music ensembles, with international acclaimed concerts and records.

PHIVOS-ANGELOS KOLLIAS - *Ephemeron*

Imagine a piece of music is like a living organism, where the work is born during each concert, it evolves and it dies at the end of the concert. Imagine that the environment of this music organism is a concert hall with an audience. This music organism is fed from the sound of its environment through microphones while it feeds this environment with sound through the speakers. Music organism and environment are an interconnected and inseparable ecosystem.

Ephemeron is an electroacoustic composition with adaptive behaviour over time. Significant characteristic of *Ephemeron* is that there is no pre-recorded material at any stage. The work emerges as a music organism from the interactions among space, software, and user-performer. The initial material of the composition is the applause coming from the previous piece.

Sur la Construction de Réalités (2010) is an acousmatic composition for eight-speakers, based on the material of *Ephemeron*. The composition you are about to listen to is using material from two organisms projected in two different environments and two different audience's reactions (the concert hall of De Montfort University, UK and the Kubus of ZKM, Germany). The material of these live organisms was taken from the particular spatio-temporal situations in order to construct transferable realities in time and space.

Now, there is no live organism any more. Here, you are in this place observing the history of another reality. You are experiencing the construction of a new reality surrounding you; the reality of your actual perception of technical information

The work is composed for an eight-speaker sound system surrounding the audience, with the support of a subwoofer. There is no live interference with the sound production or its diffusion. The channels are distributed on the eight speakers according to the diagram below. The eight individual channels can be synchronised and played-back through a sequencer.

PHIVOS-ANGELOS KOLLIAS was born in 1982 in Rhodes, Greece where he started his music education. He has studied composition in England at APU, Cambridge and City University, and in France at Université de Paris VII and Conservatoire de Boulogne. He has participated in composition workshops in Darmstadt, IRCAM/Acanthes and Impuls. He has studied composition with Horacio Vaggione, Jean Louis Hervé, José Manuel Lopez-Lopez, and he has attended master classes with Helmuth Lachenmann, George Aperghis, Beat Furrer, Tristan Murail Pierre Hurel, Unsuk Chin and Agostino Di Scipio.

MATTEO MARANGONI - Echo Moiré: Sonic Vehicles

Echo Moiré is a robotic opera-ballet in which a pair of semi-autonomous loudspeaker vehicles is employed to play a room as a musical instrument.

Exploring the acoustic properties of the room, the vehicles create aural images that float in the air, enveloping listeners with patterns of echoes rebounding off the walls.

The work is inspired by Alvin Lucier's 1968 composition Vespers and aims to raise awareness on human echolocation, aural spatial perception and the physics of sound. Using mobile directional loudspeakers emitting trains of pulses, the trajectories followed by sound waves from source to listener are made apparent.

Gradually scanning the room's boundaries, aural images of the space are formed. Modulating the pulses over time, these images are manipulated and sculpted, giving rise to different spatial forms, textures and densities in which the audience is immersed. Probing the relation between hearing and vision, the work provides a theatrical dramatization for the practice of acousmatic music.

MATTEO MARANGONI was born in Florence in 1982 and is currently based in the Netherlands, where he recently obtained a masters degree at the ArtScience Interfaculty in The Hague. Focusing on the potential of listening to establish new connections between people, places and objects, his performances and installations employ field recordings, sound archives, computer programming and DIY electronics. During his studies he has been investigating the relationship between sound, space and the body, looking for ways to address the body of the listener and to induce enhanced states of auditory awareness.

Paper Abstracts

Dancing with Interactive Space – Comparing Human-Space Interfaces of Shin'm 2.0 Using Kinect Sensor and of Shin'm Using Wearable Interface

Eunsu Kang, University of Akron; USA

Donald Craig, University of Washington; USA

Diana Garcia-Snyder, University of Washington; USA

Abstract

This paper illustrates how the interface between human and the interactive audiovisual space affected the dancer's choreography in two projects: *Shin'm* (S1) and *Shin'm* 2.0 (S2). The interface of S1 is wearable like a jacket and wired to the ceiling with elastic tubes. The S2 human-space interface has no "physical" presence but invisible layers of ranges and contours detected by the Kinect sensor. The S1 interface offered the dancer a tangible attachment but limited mobility. The S2 interface allowed the dancer to explore full range of speeds and levels while its loss of tangibility, at first, was challenging for building a palpable and instant connection.

Spatio-temporal Anomalies; spatial distortion and the persistence of vision

Miguel Felipe Valenzuela (aka FMGrande), College of Fine Arts – UNSW, Australia

Abstract

Every thought, no matter how original or derivative, has a spatiotemporal context, and in this sense a historical context. Even the thoughts of autonomous robots occur in a physical historical space. We read, understand, discover, we even dream in a space. Virtual space, however dispersed and disparate is still a quantifiable entity, where 'objective' data flows from designated gathering points within a physical space.

V'Oct (Ritual): The Anatomy of an Interactive Composition

Mark A Bokowiec, University of Huddersfield, Department of Music Huddersfield, UK

Abstract

This paper looks at the technical and compositional methodologies used in the realization of *V'Oct(Ritual)*(2011) with particular reference to the choices made with regard to the mapping of sensor elements to various spatialization functions. Kinaesonics[1] will be discussed in relation to the coding of real-time one-to-one mapping of sound to gesture and its expression in terms of hardware and software design.

ArtMachine: MindCatcher: Creating Meaning from Abstract Multi-Sensory Perception

Predrag K. Nikolic, Department of Digital Production, EDUCONS University, Novi Sad, Serbia

Abstract

Interactive Installation Mind Catcher is an ongoing art/research project. It has intention to further explore potential of artistic interactive environments for better understanding of human creativity. Few factors considered as substantial to extract and investigate, such as embodied perception, sensory information as emotional triggers, collaboration in virtual space and behavioral changes affected with interaction. During the first exposure of the installation in September 2011, a set of various data were collected including (voluntary) user personal information, recorded user sessions, results of interviews which were done with visitors, as well as numeric path models, duration and frequency of their visits. The goal of this presentation is to share the findings and to indicate some conclusions of interest for further study. Hopefully, the final results should contribute to perceptual user-generated and user-centered environment design, as well as to research on phenomena of human creativity and the relationship between complexity and creativity.

Ephemeron: Self-organising music and second-order cybernetics

Phivos-Angelos Kollias, Centre de Recherche Informatique et Création Musicale, Université de Paris VIII, France

Abstract

In this paper we discuss notions of second-order cybernetics and other systemic notions, along with their applications into music practices and music thought. The author's work *Ephemeron* is used as a case study. The discussion starts on the main concepts of second-order cybernetics, showing in this context a schematic model of the self-organising system. The work *Ephemeron* is used as a case study as a *self-organising work of music* showing the notion's application in different layers.

Whispering Scores: Exploring Reflex Plasticity In Improvised Music Making

Tim Sayer, University College Plymouth St Mark and St John, United Kingdom.

Abstract

This paper describes the underlying principle of 'Whispering Score', a prototype digital performance system which enables a musical ensemble or solo instrumentalist to interact with a generative and reactive graphic score,

projected into a performance space. The design of this system is based on Di Scipio's eco-systemic principals and uses a positive feedback loop to influence the musicians' behaviour. The performers are connected to the inner workings of the software via an in-ear monitoring system, which communicates a mixture of instructions and distractions. The premise underpinning this performance environment runs deeper than merely allowing instrumentalists to interact with technology; it references research in the area of conscious and nonconscious processing and challenges the notion of volition and agency in the way performers react and respond to stimuli. The first part of the paper examines plasticity in the central nervous system and its implications for the encoding of musical behaviour, the second part of the paper explores the role of subliminal processing in relation to graphic scores and their interpretation. This paper has as its focus the expansion of a performance parameter space into the realm of cognition and reflexivity and explores the potential of technological systems to affect the causal mapping between environmental stimuli and a performer's musical response, thus suggesting a conceptual tool with which to challenge conventional modes of improvisational behaviour.

Performative Confusion: The Next Phenomena of Digital Interactive Media

Sunghee Kim, Culture, Media and Creative Industries at King's College London, University of London/Institute of Media Arts, Yonsei University, South Korea

Abstract

Since the development of cybernetics, the relationship between life and digital media has been the subject of concern. This paper revisits past discussions, and investigates the fundamental psycho-philosophical problem that has restricted this relationship. Through examining the relationship between life and digital media that has been addressed in cybernetics and other related studies, it will be revealed that hybridization has been reduced by human subjectivity. Hybrid mediations between life and digital media have been confined by the human perceiver's tendency to secure the self from destructive phenomena. This tendency has been philosophically structuralized and concretized to onto-phenomenology, and its aestheticization. An alternative approach to the hybridization between life and digital media can be made through a post-humanist perspective that deconstructs human subjectivity. Acknowledging the complexity and uncertainty of the phenomena would enable comprehensive perception without structuralistic reduction. 'Performative confusion' is a positive description of the state of hybridization, and the subject's relation to it. It is also a reflective approach for consideration of the other elements and relations that were not discussed by the incongruent subjectivity. The art and aesthetics of hybrids between life and digital media would to be re-established from this framework.

[24-hours.in; an interactive documentary](#)

Richard Vickers & James Field, Lincoln School of Media University of Lincoln, United Kingdom

Abstract

This paper discusses the convergence of media technologies, participation culture and the new vernacular of smart device photography. The author and Lincoln School of Media colleague, James Field, are developing a participatory interactive documentary project entitled 24-hours.in (www.24-hours.in), exploring new opportunities for participation, collaboration and the potential democratization of documentary production. Utilizing user-generated video captured on mobile phones and smart devices, the project is participatory whereby the audience contribute documentary videos, around the theme of 24 hours in a city or location. With reference to Dziga Vertov's seminal 1929 documentary film 'Man with a Movie Camera', the aim is for the videos to document the cities, the people that live there and their daily lives. Moving beyond the user-generated content model, the project will build up a database of location specific documentary material and aim to create a new system for collaborative documentary production and user-curated content.

[Indeterminate Hikes+](#)

Leila Nadir and Cary Peppermint, ecoarttech, USA

Abstract

Indeterminate Hikes + (IH+) is an Android/Iphone app that re-imagines how we interact with everyday places and ubiquitous computing devices, transforming the mobile landscape into a series of sites of bio-cultural diversity and wild happenings. Most of us use our mobile phones as tools of rapid communication and consumerism, to get us what we want, and where we want to go, as quickly as possible. IH+ reappropriates this technology for a very different end, turning our phones into tools of environmental imagination, place-making, and slowing-down.

[Color Occurrence – an interactive installation \(Video link\)](#)

Ann Oren and Zevan Rosser, Anchulin Productions, USA

Abstract

Color Occurrence is an emergent text work linking color as interpreted in spoken language with Twitter users. For the project, we created a color database constructed out of colors named by our online contributors worldwide. The contributors associate a word or phrase with a color of their choice, for example, a light shade of green can be

named “Kermit the frog”, or “Toxic green” or whatever the contributor chooses to call it. The color database becomes a personal, current, “spoken language” color library. Our custom software selects at random a color name from this database. Once a color is selected, the project floods the screen with that shade of color, followed by the contributor’s name and the name they gave that color. Then, a Twitter search is performed for tweets containing this color name and live tweets that happen to contain it are displayed, generating a cross among cyber communities.

The Well Tempered City: participation and intervention in sonic interaction

Budhaditya Chattopadhyay, Department of Media, Cognition and Communication,
University of Copenhagen, Denmark

Abstract

The methodology of field recording within the everyday urban sonic experience as an artistic practice does not require the artist to directly participate in the mediation process of sonic art. However, it can be argued that if the artist does not remain a mere listener/recordist but instead registers his or her presence in the phenomenological development of the artwork by intervening as ‘self’, the outcome can transcend mere impression of the urban space and can become a critical reflection of the dynamic relationship between the artist and the city. Working on this assumption, the personal context of the artist needs to be examined in order to understand how he or she can intervene in and engage with the process of the artwork. This paper develops the argument from a practice-based approach, drawing experiential accounts of an ongoing sonic interaction-based art project, ‘The Well Tempered City’.

Merging sound, movement and architecture: WAVES

Mario van Horrik and Petra Dubach, Maatschap Duho, Netherlands

Abstract

In this paper you will read a mixture, and the result of experience, superstition, fairy-tale, subjective and maybe unchecked propositions, belly-feeling, stupidity, common sense, arrogance, knowledge, gambling and bluff. We will describe our research project called WAVES that we started in 2010, and which was a logical result of our previous artistic development. Furthermore we will explain our thoughts and dreams for the future of our project, and try to explain why we are so interested in working with materials and concepts that we cannot understand, explain and comprehend fully; why we are so fascinated by the too complex uncertainty of a system whose aim it is to destroy itself.

[Neocybernetic Art or Affect and Conversation in the Animal and the Machine](#)

Guilherme Kujawski, Itau Cultural Institute, Brazil

Abstract

The investigations into the existence of an art based on second order cybernetics are not explicitly directed to systems art neither to cybernetic art proper, artistic expressions that since the 60's would be most likely associated with kinetic objects, video feedback sculptures and, more recently, with any form of installation-based art generically designated as "interactive". The bottom line is that art objects belonging to this speculative genre, tentatively named *neocybernetic art*, are brain-like artifacts which attain a new order of functioning after a recurrent feedback between disparate internal components (or disparate external elements) crosses a certain threshold. This paper looks at the practices of artists, who, in different ways, explore the workings of emergent circular causalities in the animal and the machine. Holding a non-mechanist standpoint, it slightly draws, for the sake of introduction and inspiration, on Philosophy of Technology, Radical Constructivism, Animal Studies and Cognitive Aesthetics. Be it a piece built with robotic soft-material or a biotechnological system constructed as a means of facilitating the interaction of humans and animals, when a specific circular causality emerges from a current functioning, something new leaps into existence, as if the artwork was possessed by what Jane Bennett calls the -vibrant materiality.

[Mark Your Territory: Bridging Ownership between Real and Digital Spaces \(Video link\)](#)

Andrew Quitmeyer and Michael Nitsche, Digital Media Program, Georgia Institute of Technology, USA

Abstract

This paper describes the design of a hybrid physical/digital system for claiming ownership of territory. By combining digital and natural affordances for staking ownership, I provide a new remediation featuring greater embodiment than is available in existing services such as *foursquare*.

The core functionality draws from the combination of physical sensing and digital communication via an Arduino ADK attached to an Android Smartphone through custom software. The design on both digital and physical ends of the system promotes feedback between these realms. Actions in physical realms affect those of the digital, and digital claims to ownership can likewise manifest themselves in the real world. The "Mark Your Territory" system serves as

a rhetorical prototype to encourage deeper analysis for improving the quality and flow of information between physical and digital realms.

Biopoiesis; electrochemical media

Carlos Castellanos, Steven J. Barnes DPrime Research, Canada

Abstract

We discuss *Biopoiesis*, a cybernetic art project that explores the relationships between structure, matter, and self-organization. Based on the work of cyberneticist Gordon Pask, the project features the construction of simple computational devices that harness an electrochemical reaction. We discuss the design and construction of the system and explore the relevance of Pask's electrochemical work to the arts. We also put forth the notion of a "philosophy of open-ended ambiguity" embedded within this work and discuss its resonance with the arts.

Stress-o-stat

Howard Boland, C-LAB / University of Westminster, School of Life Sciences, University of Westminster, UK

Abstract

Stress-o-stat is a living artwork that visually captures stress in bacteria as light. The work explores convergence between life and machine, where the machine becomes life-like and the bacteria, engineered through synthetic biology, machine-like. *Stress-o-stat* is a result of an immersive and independent laboratory practice using synthetic biology to develop new types of artistic expressions. A special genetic switch involved in stress response was located and combined into a genetic construct to produce fluorescing proteins. Once implemented in bacteria, fluorescing proteins are expressed during oxidative stress producing a yellow green colour in response to blue light.

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