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The LABS Peer Review Panel for 2020 included Christopher Carruth, Yiannis Colakides, Mat Dalgleish, Tracy Harwood, Tom Leeser, Angeliki Malakasioti, Shiro Matsui, Mary Anne Staniszewski, Yanai Toister and Paz Tornero. The deadline for receipt of abstracts for review by the LABS peer review panel is 30 June each year. Abstract rankings are announced in the autumn. The aim of LABS is not to duplicate existing thesis databases but rather to give visibility to interdisciplinary work, which is often hard to retrieve from existing databases.

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Sheila Pinkel
LABS Editor-in-Chief
Leonardo International Co-Editor

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TOPOGRAPHIC ABSTRACTING AS ECOLOGICAL PERFORMATIVITY

Teresa Marie Connors

Audiovisual Installation as Ecological Performativity lies in the fields of sonic arts and audiovisual practice, which experiment with the development of nonlinear installations. The project was inspired by my artistic shift away from fixed-media formats to nonlinear procedures and by recent ecological discourses of human and nonhuman agency. My research aims to locate an ecology of practice that, rather than being autonomous and reductive, is directly affected by the specificity and proximity of connections made in practice and process on a relational level.

My research was guided by the belief that nonlinear creative processes exploring cocreative devices from the agency of material can elicit different sensibilities and lines of communication, providing an alternative way in which to be in creative practice and to experience the world—one that is emergent, contingent and performative. Thus I was drawn to concepts of material agency and performativity in the writings of Karen Barad, Jane Bennett, Judith Butler, Donna Haraway, Andrew Pickering and Timothy Morton. In addition, I enlisted the philosophical provocations of Timothy Ingold, Erin Manning, Brian Massumi, Isabelle Stengers and Thon Van Dooren to locate my ecology of practice in a relational mode of experience that emphasized an ecological awareness.

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FROM INTERACTION TO POSTPARTICIPATION
The Disappearing Role of the Active Participant
Varvara Guljajeva
This practice-based research explores the shift from active to passive participation in interactive art. By exploring interactive art history and the discourse of identity within the field, the dissertation investigates how artworks that demonstrate no audience involvement, but which still incorporate an internal system interaction with a data source, are addressed.

The research tracks down the interest shift from human-machine to system-to-system interaction and explores the reasons behind this. In order to approach the paradoxical situation in interactive art, where the artworks that demonstrate no direct audience interaction are addressed as interactive, the term postparticipation is introduced and discussed in the thesis. Research tools, such as direct and indirect postparticipation, are developed and applied for the practice-based investigation.

The dissertation contributes to the evolution of interactive art, by analyzing and contextualizing passive audience interaction in the form of postparticipation. I argue that the concept of postparticipation helps to address the shift from an active to a passive spectator in the complex age of “dataveillance,” an age in which humans are continuously tracked, traced, monitored and surveilled without our consent.

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PhD, Estonian Academy of Arts, 2018.

A REACTIVE BRAIN COMPUTER INTERFACE
A Novel Sanification and Visualization Approach Evoked by Illusions
Marlene D.D. Mathew
This dissertation looks into visual illusions to explore the effects that art may have on the brain. Visual processing can create visual evoked potentials (VEP) in our brainwaves—evoked potentials caused by a visual stimulus and measured by the electrical response of the brain’s primary visual cortex.

The author develops an expressive interface using reactive BCI data by creating a framework that will provide sonic and/or visual output of this neurofeedback information. This is done primarily from an artist/composer (Art) standpoint while looking into cognition and perception (Science). The development of Visum and Aspecta, two BCI artworks by concentrating on the conceptual design, implementation and challenges is also documented.

Significant developments in the use of BCI technology for artistic purposes is explored, like how to precisely collect and process EEG data aesthetically, and what license can be used with the data in order to create meaning or an environment for the audience themselves to bring meaning to the artwork. By intersecting scientific methodologies and media arts practice, the author shows how visual perception can inform and offer new forms of expression.

The overall goal is to offer pathways within the field of human-computer interaction by creating art using visual sensory based methods of interfacing with computer systems that aim to amplify human qualities by creating art with them.


The Rhythm of City (2010) by Varvara & Mar at the Elektronika Festival, Belo Horizonte, Brazil. (© Varvara & Mar)

Visum—a VEP visualization, 2020. (© Marlene Mathew)
**ART AND TECHNOLOGY**

*Coherence, Connectedness and the Integrative Field*

Carlos Augusto Moreira da Nóbrega

This thesis is a theoretical and practical intervention in the field of art and technology. It proceeds from the reexamination of four specific domains that in the past 40 years have considerably informed the invention of new aesthetic forms: art, science, nature and technology. We have identified that each one of these domains and how they inform one another reflects the influence of a Western analytical tradition based on fragmentation, dichotomies and dualities. In consequence of this, art of the last decades has suffered from a sort of mechanistic thought that results from a predominantly weary aesthetic model, founded in dualities such as object/process, form/behavior and meaning/information.

The main question that the present study addresses is: How does one overcome this predominantly reductionist inheritance and develop an aesthetic model that is able to interconnect in an integrative fashion those disparate domains, respective discourses and practices? The answer to this question, developed throughout this thesis, is an aesthetic principle built upon the notions of resonance, coherence and field models, and rooted in an integrative view of living organisms based on the theory of biophotons. This constitutes the main contribution of the thesis to new knowledge.

The practice-based methodology of this thesis has been to develop artworks based on the confluence of living organisms and artificial systems in order to permit empirical observation and reflection on the proposed theory.

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**THE ART OF CYBORGs**

*A Techno-Social Approach to Contemporary Culture*

Minka Stoyanova

While some frameworks for the discussion of contemporary art outline totalizing era-defining narratives, others are based on the recent adoption or proliferation of specific technologies. Both will likely become obsolete as technological development progresses, and neither is fully applicable across artistic media. The project of this thesis is to suggest the cyborg as an alternative approach that can be applied across temporalities and practices.

Analyzed in three parts, this thesis outlines technology’s historic relationship to society and culture since the rise of cybernetics in the mid-twentieth century, defines cyborg theory at the level of the individual as a technosocial cultural theory and, finally, applies that theory to an analysis of online performance art and hacking/making as artistic practice.

The section on online performance investigates how technology has been used to extend and reform the body drawing parallels between physical body alterations and software-based alterations of the virtual cyborg body. The final section analyzes hands-on practices of media art as critical engagements that disrupt the cyborgian continuity between individuals and their technologies. These readings are not meant to be all-inclusive but should illustrate the usefulness and applicability of the cyborg as a tool for understanding contemporary artistic production.

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PhD, City University of Hong Kong, 2019.
**HOW MACHINES SEE THE WORLD**

*Five Essays on Biological and Artificial Vision*

Carloalberto Treccani

This thesis aims to investigate how vision emerges in biological and artificial "creatures."

The thesis, positioned at the intersection of art, aesthetics, neuroscience and artificial intelligence studies, begins by questioning why and how the world appears articulated into objects distinct from each other, with precise characteristics. The most immediate answer is: because the world has those characteristics. However, as shown by several psychophysical studies, biological visual systems cannot retrieve the physical properties of the world. Nevertheless, despite these problems, visual-guided behaviors are generally successful. Given this paradox, this thesis investigates the strategies that visually gifted "creatures" have implemented to circumvent these obstacles.

With this purpose in mind, the thesis first highlights difficulties, complications and erroneous convictions about vision that the attempts at the creation of visually "intelligent" machines have unveiled. Secondly, it discusses the role played by artificial neural networks to better comprehend how biological vision works. From there, using the driving principle of neural network technologies, i.e., trial and error, the thesis proceeds to formulate an empirical approach to vision that is able to connect biological and artificial vision.

Finally, the thesis tries to foresee several future scenarios of the coevolution of human and machine vision. The hitherto unexplored scenarios that the arrival of "intelligent" artificial vision opened oblige us to reconsider vision as a diffuse practice across visually gifted entities.

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PhD thesis, City University of Hong Kong, Hong Kong SAR, 2020

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**HONORABLE MENTIONS**

The editors of *Leonardo* wish to acknowledge the following authors of highly ranked abstracts. These abstracts are published online at www.leonardo.info/labs-2020.

- Birgitte Aga, "Prototyping Relational Things That Talk: A Discursive Design Strategy for Conversational AI Systems"
- Renata Buziak, “Biochromes: Perceptions of Australian Medicinal Plants through Experimental Photography”
- Kiriaki Genitsaridou, “Electronic Art in the 20th Century. The Case of Frank J. Malina: A Steam Methodology Educational Program for Primary School Children”
- Louise M. Hisayasu, "Mediated Memory and the Internet: Indigenous Protagonism in Brazil"
- Thanos Polymenes-Liontiris, "IM-Medea: Posthumansim and Remediation in Music-theatre"
- Ezra Jeremie Teboul, "A Method for the Analysis of Handmade Electronic Music as the Basis of New Works"
- Daria Vdovina, “Synthetic Creatures of Media Arts: Biorobots and Other Biotechnological Entities as an Art Practice of Hybrid Ecology”
- Anne Yoncha, “Second Wind: Materializing Wind-speed Data from a Ponderosa Pine”