Design for the Non-Human

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Abstract

New forms of technology now support shared experiences between humans and other species and may enhance the function of non-human life forms. Design for the Non-Human, brings together artists and designers working on generative, agent-based artworks that either (1) allow a non-human life form to use technology in such a way that its abilities are greater than those of a non-technologically enabled member of its own species, or (2) extend the sensorium of us humans to the sensorial experiences of our companion species.

Keywords

Non-human, Anthropocene, Design, plants, Animals, Microflora, Ar.t

Introduction

In line with ISEA 2017's theme of Biocreation and Peace, *Design for the Non-Human* will focus on the technology we create for our living, non-human co-inhabitants. This panel brings together a mix of artists and artist teams working on technologies designed with and for plants, animals and microorganisms. Panel participants will discuss relevant works of art and works-in-progress that attempt to forge new technologically-mediated relations with non-human entities. These works bring to the fore new philosophical questions alongside new technological forms. The panel participants will facilitate a dialogue that includes audience members to discuss relevant practices and approaches in designing for non-humans.

We would like to propose that these works are an act of speculation. As such, they relate to various intellectual movements that seek to challenge commonly held positions and biases, especially those that are anthropocentric. Speculative Realism, Posthumanism, New Materialism, and the Non-human turn all question the limit of what Donna Haraway has called "fantasy of human exceptionalism" — the idea that humans are somehow separate, beyond, or more advanced from our earthly cohabitants (2008, p. 11). Philosophers and theorists working within one or more these thought-trends help elucidate the limits of human experience and thought, highlighting capacities, experiences and potentials of both living and non-living non-humans.

As Steven Shaviro writes, "Such a questioning is urgently needed at a time when we face the prospect of ecological catastrophe and when we are forced to recognize that the fate of humanity is deeply intertwined with the fates of all sorts of other entities. Anthropocentrism also has become increasingly untenable in the light of scientific experiment and discovery" (2014, p. 1).

Speculation, however, is not just a tool of philosophy, but also encompasses making. Speculative design, as but one example, is a call to action, a shift in design practice to "search the space of actual possibility" (Bratton, 2016, n.p.). It is an attempt to use the tools, methods, and practices of design to challenge "mainstream design" (ibid). Often this is a critique of consumerism and capitalism, but it rarely ends there. Contemporary art has long been the process of instantiating ideas in physical form. Like design, the goal is not to create new systems of thought, but a more materialist practice of creating new experiential forms.

It seems that the experiential form is the joy and potential of design and art making. Art may provoke the mind, but it does so first by provoking the senses. The following works are not just speculative, but *actual*. To actualize, or to make physical is the important contribution artists and designers can make in this realm.

Actualization is a critical counter-narrative to the emphasis on thought often found within theory. Theory is, arguably, intended to change the way we think; it provides new techniques of speculation and analysis. This is valuable and necessary and should in no way be castigated. Yet, it is equally important to feel in new ways. Thus, the following works offer new forms of phenomenological experience for humans and non-humans alike. This is a process that involves the configuration of techniques and technologies to produce physical objects.

These new forms of experience are created and bridged through technological invention. The philosopher of technology Gilbert Simondon claims that technology extends our sensorial experience into the world. It is through technology that we may experience the subtleties of nature. "When it's a question of detecting subtle, yet determinant phenomena that escape regular perception, one can only see the aesthetics of nature with the aid of the technical object" (Simondon, 2012, p. 5). Technical objects are surrounded by a "margin of liberty" that affords new aesthetic experiences (Simondon, 2012, p. 5). The following projects help us imagine what new experiences we may find for both our human and non-human audiences through technical experimentation. While our focus in this panel is largely on living non-human experience, we must also consider the ways in which technical objects structure and mediate cross-species encounters.

However, to be actualized, as in art and design, is not necessarily to end with a stable object that closes some sort of speculative loop. Instead, we hope that these projects individually and cumulatively trigger other speculations. As such, the panel will include an open-ended conversation between panelists and audience members to further the notion of designing for and with non-humans. Additionally, a public bibliography will be shared and crowdsourced during the panel to develop a more rigorous approach to our understanding of the non-human.

Projects

The Hand Up Project (HUP): attempting to meet the new needs of natural life forms is dedicated to producing alternative forms of housing, specifically designed for use by land hermit crabs out of man-made materials. In order to remain housed and protected from predators, hermit crabs adopt the abandoned shells from marine gastropods. The problem is that, due to environmental degradation, there are no longer enough shells on global shorelines for this animal to use.

In answer to this issue, HUP utilizes an adaptable 3D design to produce a superior from of hermit crab housing. This new design minimizes the spiral in the middle of a traditional shell to produce an internal volume to weight ratio favored by the animal. Upon its debut, HUP was a great success. Twenty-five percent of a crab population chose to move into a new, fabricated home when presented with the novel structures over a two-month exhibition period.

In order to fund a widespread distribution of the new shelters HUP is currently soliciting corporate sponsorship. In exchange for financial support, the project proposes to place a logo on each fabricated form before placing the shelter back into the wild for the animal to use.

Fermentum

Sensors embedded into fermenting vegetables are used to track environmental changes resulting from microbial

transformation. The data from these sensors is then sonified. Sound offers a subtle mode of revealing the ongoing processes of fermentation. While the project relies on the quantification and indexical tendencies of computation, the resulting sounds challenge our abilities to understand the data. The sensors provide hard data on the fermenting milieu, yet sound offers the opportunity to deal with 'hard data' in ways that do not present numerical focus. The goal here is not to overwhelm the audience with 'knowledge,' but instead to create an environment, a sensory experience.

Central to this project is the claim that we need to push beyond theory and attempt to engage with non-human experience through our own, human, sensorial register. How can we create events shared across different experiential regimes? The underlying conceptual framework, which builds upon the ideas of Gilbert Simondon and Alfred North Whitehead, focuses on this question. Simondon's philosophy of individuation and concept of techno-aesthetics help define a praxis of making biological and technological artworks. Whitehead's theory of prehension reinforces Simondon's techno-aesthetic claims while emphasizing non-human experience.

Differently Abled Arts Studio: Appropriate and Creative Technology for Enrichment of Non-Human Intelligence, Culture and Personality under duress

How do we make art for non-humans? The intention is to improve designs and methods of expressing art for non-humans with a variety of species and trans-species in captivity. In particular, we are interested in those animals showing signs of behavioral disturbance, cultural alienation and neurotic personality disorders. We would like to underscore the similarities, differences, power relations and mutualisms between humans, non-humans, living being non-persons (without dignity) and transgenic trans-organisms. To do this properly we work through combining ethological, relational, experiential and aesthetic communication. Performative ethnography may be enough to show appreciation for the differently abled, but how do we design enrichment for those torn, chopped and screwed through Ontological Remix: zoo beings, farm beings, park beings, pet beings and lab beings? What radical remixes can we offer as being options in a trauma zone of industry and usury?

Project Florence

Mankind evolved on the ground of tools nature provided and started very early taking advantage of biological processes. Over time, nevertheless, humans had been distancing more and more from nature and disconnected from being part of it - instead we built our own artificial world. New technologies put biology back into spotlight and open up a lot of new opportunities to manipulate, design, understand, protect and interact with our natural environment. This raises the question, though, what is still natural and what artificial.

This talk is on the opportunities of a future where the natural and the artificial are connected and interact enabled by technology and driven by nature - and on how this combination of digital and natural processes leads to new applications and innovative products like Project Florence. A first attempt to build an interface between plants and humans. It approaches plants as reactive living matter which generates new perceptions towards how we interface with our natural environment. This creates a rudimentary conversation with our natural environment. Project Florence will be one of many other examples how technology can be an enabler for more sustainable systems and a mediator between the natural environment and us.

Urban Animals Need a Better Business Plan: Street Cat Photo Booth 2.0

"Urban animals need a better business plan." As it evolves, Street Cat Photo Booth answers the subtle challenge posed by artist and professor Natalie Jeremijenko in her ISEA2016 keynote, recasting animals as participants in the digital economy in its exploration of what it means to be an urban resident. In empowering cats to assert and monetize their own social-media presence, the project explores metacreation in conjunction with non-human stakeholders as well as the aesthetic potential for camera orientations primarily used for surveillance; while also challenging Maslow's Hierarchy of Needs in the Post-Anthropocene Era. In viewing the results of cat-initiated photo shoots, the audience can playfully question the role of art creator, agency of animal subjects, authorship; and more broadly, the worth of marginalized and itinerant scavenger communities existing within urban environments—both animal, and, by reflection, human. Street Cat Photo Booth enables an animal-network interface that requires no human intervention while empowering feral cats to earn money for their own caretaking. The use of open-source hardware (the Raspberry Pi) and software enables any interested person to cheaply construct and deploy a photo booth of her own, which will begin making images once a street cat enters its space.

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Authors' Biographies

Elizabeth Demaray designs listening stations for birds that play human music, fabricates alternative forms of housing for hermit crabs, and builds light-sensing robotic supports for houseplants.

This last endeavor, titled *The IndaPlant Project: An Act of Trans-Species Giving*, entails creating moving floraborgs that utilize machine learning to allow potted plants to roam freely in a domestic environment in search of sunlight and water.

A recipient of the National Studio Award from NY MOMA/P.S.1 Contemporary Art Center and the NYFA Fellowship in Sculpture, Demaray is an associate professor of fine arts and head of the sculpture concentration at Rutgers University, Camden. On the Rutgers, New Brunswick, campus, she is an advisor in the Department of Aerospace and Mechanical Engineering and an advisor at the Art and Artificial Intelligence Lab in the Department of Computer Science, which is dedicated to supporting artistic practice in the fields of computer vision and machine learning.

Kira deCoudres is a recent graduate of Science, Technology, & Digital Media Studies at Hampshire College in Amherst, Massachusetts (US). Her work ponders questions of posthuman potential and the futility of futurism through "glitched" media remixing and sensorial scrambling. At play in deCoudres's work are themes of distortion and remix as bio-technic disruptions of embodiment.

Tyler Fox is an artist, researcher, technologist and educator, his work focuses on the ways in which non-human relations shape our experience of and relationship to the surrounding world. Fox leverages technology to create affectively rich experiences featuring living, non-

human organisms. His writing mobilizes philosophy and contemporary theory to consider the aesthetic potential of technology and non-human experience. Fox incorporates pedagogy into his artistic practice, using formal and informal workshops as a form of community engagement. His artwork has been shown nationally and internationally. He received a PhD from the School of Interactive Arts & Technology at Simon Fraser University, an MFA from the Elam School of Fine Arts at the University of Auckland and bachelor's degrees from the University of Washington. He is a member of DPrime Research, an art-science nonprofit research organization. Fox is a Lecturer in Human Centered Design & Engineering at the University of Washington.

Leigh M. Smith is a computer scientist and software developer of music information retrieval (MIR), audio signal processing, computer graphics, embedded, and cryptography systems. He has published as a post-doctoral researcher with the Music Cognition Group at the Universiteit van Amsterdam and Analysis/Synthesis Group at IRCAM (Paris), and taught at several universities on music perception, cognition and MIR, with a focus on analysis and modelling of musical rhythm for interactive performance systems. He is currently a senior research engineer at LANDR Audio Inc., based in New York City. His musical interests include performing as a guitarist. Smith and Yerman presented Street Cat Photo Booth 1.0 at ISEA 2015.

Helene Steiner is a UK based designer and researcher with a focus on new interactions in and with our (natural) environment. Her research follows a biological approach and looks at opportunities to not only bridge the physical and digital world but also the natural and artificial. Her background is in Product Design with a MDes from the Bauhaus University in Weimar. During her time in Vienna she studied under FROG founder Prof. Hartmut Esslinger to explore the opportunities of extending our bodies with technology and prosthetics, what leaded to her MA and MSc in Innovation Design Engineering at the Royal College of Art and Imperial College in London. Before her PostDoc position at Microsoft Research, she collaborated with the Tangible Media Group at MIT Media and is a visiting lecturer at the Royal College of Art.

Jordan Matthew Yerman is a Vancouver-based artist and writer who has worked and created from Tel Aviv to Tokyo. He explores the experiences of feral cats as a metric of urban measurement, while assessing the embodied practice of engaging such furtive subjects. Internationally published, he partnered with Fujifilm to photograph cats across Japan. He presented the Street Cat Project at BIL2015, and Street Cat Photo Booth at BIL 2016.

He studied at UC San Diego and the London Academy of Music and Dramatic Art. He has performed off-off-Broadway and on the West End, and has appeared as a digital installation at the Bronx Museum of Modern Art.

Adam Zaretsky, Ph.D. is a Wet-Lab Art Practitioner mixing Ecology, Biotechnology, Non-human Relations, Body Performance and Gastronomy. Zaretsky stages lively, hands-on bioart production labs based on topics such as: foreign species invasion (pure/impure), radical food science (edible/inedible), jazz bioinformatics (code/flesh), tissue culture (undead/semi-alive), transgenic design issues (traits/desires), interactive ethology (person/machine/non-human) and physiology (performance/stress). A former researcher at the MIT department of biology, for the past decade Zaretsky has been teaching an experimental bioart class called VivoArts at: San Francisco State University (SFSU), SymbioticA (UWA), Rensselaer PolytechnicInstitute (RPI), University of Leiden's The Arts and GenomicCentre (TAGC) and with the Waag Society. He has also taught DIY-IGM (Do-It-Yourself Inherited Genetic Modification of the Human Genome) at New York University (NYU) and Carnegie Melon University (CMU). His art practice focuses on an array of legal, ethical, social and libidinal implications of biotechnological materials and methods with a focus on transgenic humans. He also runs a public life arts school: VASTAL (The Vivoarts School for Transgenic Aesthetics Ltd.) and psiFert, a psychic Fertility Clinic.