NOTES ON SMART BEE-ING AND UN/NATURED TECHNOLOGIES

May 2018. In the garden, Copenhagen

Sisse Finken
Laura Beloff
Sanna Marttila

The IT University of Copenhagen, Denmark

It is mid-May and the first month of spring in Scandinavia. Plants are sprouting in the mix of rain and sun. One of the authors' hands smell of soil, lemon myrtle and lavender, and her arm itches from a few insect bites. She has been working in the garden, in the center of Copenhagen, DK, cultivating the soil to make a small meadow that will hopefully serve wild solitary bees along with a small wooden bee hotel that has been placed in the garden.

With this short intro, we put forward our interests for insects, in the city, which we have been concerned about for circa a year. That is, in recent years, as reported in newspapers (e.g. Carrington 2017), there has been a growing concern about the diminishing amount of insects - both in the cities and in the countryside. This has led to a recognition of its impact to other organisms, such as birds, which numbers have dropped along the disappearance of their prey as have been recently observed in Europe. The loss of biodiversity is causing a negative spiral through a chain-reaction within ecosystems. We are increasingly becoming aware that natural environment is a crucial element for non-humans as well as well-being of humans.

June 2018. Bee hotel in the garden.

June 2018. Two small meadows in the garden.

Such concern has followed us during the past year (fall and winter) where we (during small breaks from the office) have walked around our university campus in Copenhagen to explore where and how we could set up small experiments (bee hotel, IT, and art) to involve wild bees as participants in university life.

The campus is an urbanized site with a parking lot and other surrounding buildings – it appears clean and hardly have any wild sprouting plants. When exploring this site, new questions about wild bees have surfaced and increased our interest in the topic of insects in urban settings: would bees even come here if we put up a bee hotel, can we put it up, how to track them, how far do they move to pollinate, do they prefer some flowers over others? Along such questions, we started reading more carefully about bees and their nesting sites (e.g. Fortel et al. 2016; MacIvor & Packer 2015). In this way, rather than experimenting, the nature of our campus site has been part in prompting questions, furthering explorations, and coining our interest.

Along the interest for the bees/insects and urban environments, we are concerned about Smart Cities (e.g. Criado 2015; Colding & Barthel 2017) - how they are proposed and currently built in different parts of the world - Denmark also has various initiatives on Smart Cities (e.g. Copenhagen Solutions Lab). Within this we are interested in how the natural environment is included and addressed in the Smart City concept, natural environment meaning with its variety of organisms as a part of the Smart City development. We have currently a project-in-planning-phases (Smart Beeing), which focuses specifically on insects in Smart City environments sharing the space with humans. We are asking how is it possible and what it means to include natural environments and non-humans into the Smart City development? How can the Smart City concept, which is based on data collection, and insects be successfully integrated?

Theoretically we draw on works within STS/feminism (Haraway 2016, Tsing et al. 2017) and commons (Ostrom 1990, Ostrom and Hess 2007).

June 2018. Overlooking the parking lot from one of the author's office.

June 2018. A close-up of plants at the parking lot (it has been a dry spring).

June 2018. From the parking lot looking through a group of plants in front of the university building.

Research interests

Sisse Finken: within this project-in-planning, she is interested in how nature is conceptualized in smart city discourse/designs/IT. That is, what falls in- and outside? She centers her interest in the urban framing of the 'Smart city' and asks what nature is possible in such sites? And further, how to be aware of technology as shaper of relationships between humans, materials, and insects? That is, if we consider (alongside other theorists) that technology is carrier of e.g. gender and culture, how then can it become carrier of nature?

Laura Beloff is investigating within her research and artistic practice new types of ecologies where technological and biological agencies and forces meet in different levels. In connection to our planned Smart Beeing-project Beloff asks if artistic approaches and IT-technology can support the forming of a new type of relationship between, and/or perception of natural environment and humans? And can this relationship foster co-living with other organisms, e.g. insects? For example, what does it mean to track insects with technology;

who gains and what? Beloff's artistic explorations have dealt previously e.g. with fruit flies. Her work Fly Printer - Extended (2016) points to a divide between the engineered and the organic and shows a human aspiration for control of information and of biological species. This latest version of the work also includes AI, which aims at interpreting to humans random dots produced by flies based on a large database of human made images.

Sanna Marttila is interested in bottom-up civic processes and collaborative and commons-based endeavors. Specifically, in the Smart Beeing initiative she is interested exploring ways how citizens can participate in collective city-making, and co-construction of, and contributing to commons, in collaboration with other actors that co-exists in public space. Furthermore, to investigate how does this participation and co-evolution unfolds over time? And to study what kind of infrastructures and resources are required to better support fruitful relationships between these actors, and to maintain and strengthen their agency. See earlier related work e.g. Marttila & Botero (2016). Bees, drones and other *Things* in public space: Strategizing in the city.

Bios

Docent, Ph.D. **Sisse Finken** (DK) is an IT ethnographer at heart who is concerned with exploring relations between practices of design and use – between the material and social and the practical and theoretical. Within such relationships she pays specific attention to the work technological artifacts (are put to) do *and* the moves, delegations and/or (re-)organizing logics that follow from/with such. Her research is influenced by the traditions of social anthropology, science and technology studies, participatory design, and computer supported cooperative design. Within this, she both draw on and question such methodological frames. Since 2008 Finken has been engaged in the PDC where she has served as organizing and program committee member. Prior to her current affiliation with the IT University of Copenhagen (ITU), Denmark, she has worked at University of Oslo, Norway, and Linnaeus University, Sweden. At present she is Associate Professor in the Technologies in Practice (TiP) research group at the ITU.

Ph.D. **Laura Beloff** (DK/FI) is an internationally acclaimed artist and researcher. She functions in-between academic research and artistic production. Her practice-driven research is located in the cross section of art, technology and science. The outcome of the research is in a form of process-based installations, wearable artifacts, and programmed conceptual structures that deal with the merger of the technological and biological matter. The research engages with the areas such as human enhancement, biosemiotics, biological matter, artificial intelligence/life, robotics, and technology in connection to art, humans and society. As well it results in research papers, articles and chapters in variety of publications. Beloff is a frequently invited visitor on her artistic research and practice in universities and art events. She has been actively exhibiting worldwide in museums, galleries and art events and has received various awards and grants. She has been professionally active and has influenced many projects and developments in the arts in the Nordic countries. She was a Professor at the Art Academy in Oslo 2002-06, a visiting Professor at The University of Applied Arts in Vienna 2009, 2011, she has been a recipient of a prestigious 5-year grant for artists by the Finnish State 2007-11, and currently she is Associate Professor and the Head of the PhD School at IT University in Copenhagen. http://www.realitydisfunction.org/

Dr. **Sanna Marttila** (DK/FI) works as a postdoctoral researcher at IT University of Copenhagen. She works in the field of interaction design and carries out design research projects in real-world settings, applying participatory design, co-design, and open design methodologies. Her recent research centers on designing meaningful public access to the vast digital archives that exists in public memory institutions. As a designer Sanna's interest includes open and collaborative media design, commons-based peer production, and creative re-use of digital cultural heritage materials.

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