

Bee Ecology – the Transparent Beehive

A collaboration between honeybees, artists, scientists and urban ecosystems.

keywords: art & science, honey bees, ecosystems

representing artist: Annemie Maes

collaboration: Koç University Istanbul, Vrije Universiteit Brussels (VUB)

the aim of the project :

This collaborative project wants to survey in an artistic way the multiple fields of interaction between honeybees and the urban ecosystem. It is remarkable to see how a bee population functions and evolves very much in accordance to the human activities we are developing around them: gardening and urban agriculture. The production of honey is different related to the flowers we grow, the plants we like, the garbage or pollution we produce. Bees are very responsive to the different biotopes that we share. Though we seem to have rather few insight into what constitutes the diversity of our surrounding living place, and that's something we want to research on a deeper level. As bio-markers, bees can give us valuable information about living conditions in our continuous productive urban landscapes.

We will develop a transdisciplinary approach, in which we design and examine new organic beehive models (sustainable hardware), as well as new technology. Green ICT will be integrated into the hives in a natural and bio degradable way (sensors & software). This hard-and software will be related to the behaviour of honeybee colonies, as well as to their interaction with the environment. Collected data (colony behaviour, pollen- and honey analysis, abiotic environmental data) will be analyzed to represent our urban environment in a visual way.



In 'The Bee Archives or Stories from the Drying Room' the city honeybees are the main performers.

The sonification of the bees' activities creates a real-time subtle soundtrack for the life in the hive. The transparent observation hive displays the organisation of the community and the collective decision making. (2012)

In previous projects we developed different tools for identifying the specificity and relatedness of the changing assemblages of plants, insects, and related human activities.

Adding new sensor networks to our distributed OpenGreens database and gathering the audiovisual data with our annotation database Padma/Pandora, we want to portray the urban environment as it is changing over time into a continuous productive urban landscape (Cpuls).

It is a diverse area where a lot of activities, from accidental nature to collective and community gardening and urban agriculture, develop between the industrial buildings, office zones and living areas.

With this project, in which city honeybees play the leading role, we want to research how the sustainability of cities can be increased in the future, and how citizens can be actively involved. We attempt to uncover the eco-political control of empty spaces (as rooftops) and food sovereignty.

The research into the survival of the honeybees construct an open discursive framework to tease out a range of issues in relation to our environment, seed sovereignty and food urbanism.

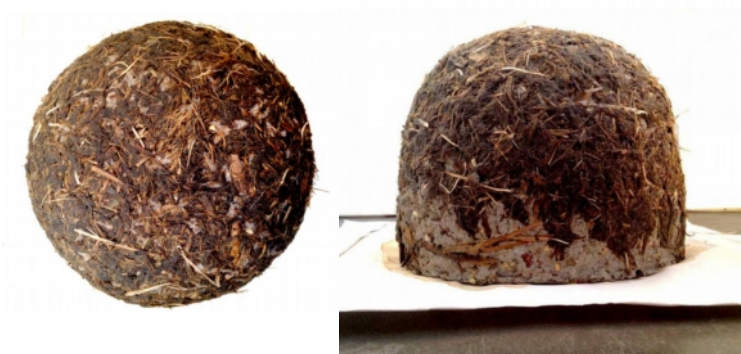


The Bee Monitoring project probes deeply within a network of ICT-enhanced beehives. Between may 2011 and april 2012, a complete cycle, from the awakening till the hibernation of the bee population, was recorded in a continuous stream of pictures, sound and sensor data. All this information is readily available online for beekeepers, scientists and other artists, offering an opportunity to study the bees as bio-indicators. (2011)

methodology:

The Bee Monitoring program is a longterm artistic research and is linked to the OpenGreens project. OpenGreens (2009) investigates different bottom up approaches for designing human environments that have the stability and diversity of natural ecosystems (permaculture). It covers the integration of urban agriculture, honeybees and their role in urban ecosystems, renewable energy systems, food sovereignty systems, natural building, rainwater harvesting and urban planning along with the economic, political and social policies that make sustainable living in cities possible and practical.

An OpenGreen is an Open Air Laboratory, a Kabinet of Wonders, a place for study and reflection. OPEN stands for openness, collectivity, experiment, bottom up, DIY, networks of creative people. GREEN stands for nature, ecosystems, natural processes and biodiversity. But all OpenGreens are zones where culture and nature overlap, and where people play with a diversity of solutions to make their life more sustainable.



Research on organic beehive designs. Plantfibers from sunflowers and Calendula officinalis, a mix of dried herbs and seeds, recycled paper. Urban artfarm, Brussels (2013)

The connected OpenGreens design a pattern of ecological corridors in the city. They rely partly on methods of urban agriculture, guerilla gardening, ecological management and social anthropology. These corridors are monitored with avant-garde technologies, so that they become experiments on the edges of art, science and technology. Corridors are here seen as art works that contribute to social cohesion and sustainability by raising awareness on the current state of our urban habitats.

Concretely, we will represent the artistic research in the form of an installation that can be experienced as a new medium of social sculpture, a Gesamtkunstwerk that relies on the creative participation of many.

The research becomes a fragmented but growing territory where everyone can connect and contribute to, and where slowly relationships and patterns emerge from. We want to work with creative ways to raise awareness, not only about our shared surroundings, but also about the ways we can spread a change that makes sense with a wider than anthropomorphic view only.

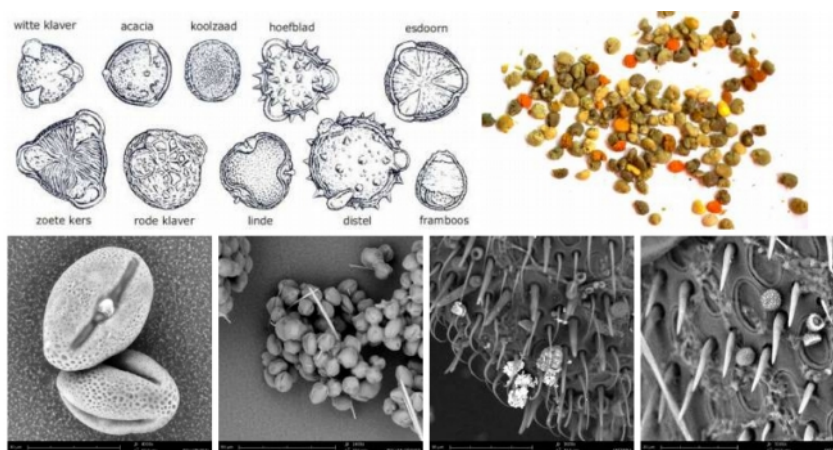
With the 'bee-mapping' of the connected biotopes we hope to come to a new but sensitive representation of our own living environment, not only providing insight in the constantly changing conditions we live in, but also bringing forth a new material from which new ecological artworks can be created.

presentation format :

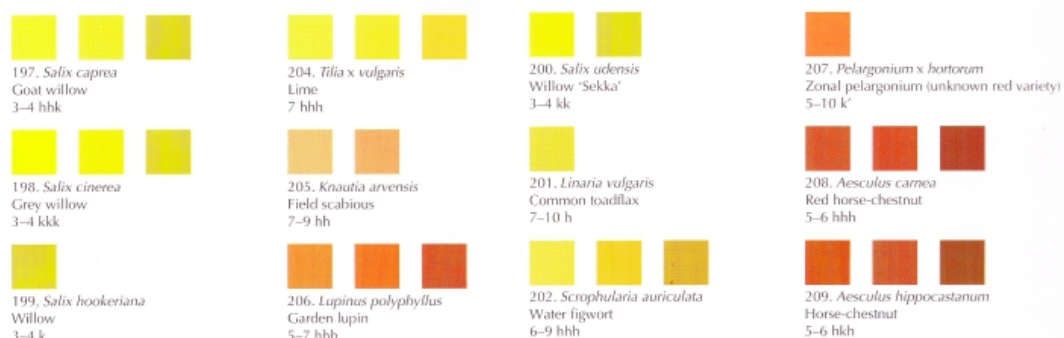
The project will be presented as an artistic research installation. It has a strong digital component (websites, databases) and a very present analog component (installation, prints, publication).

The digital platform (pandora.okno.be) is home for all video, text and audio contributions. The documentation builds up in a dynamical way, following the timeline of the project development. The content will be categorized using keywords.

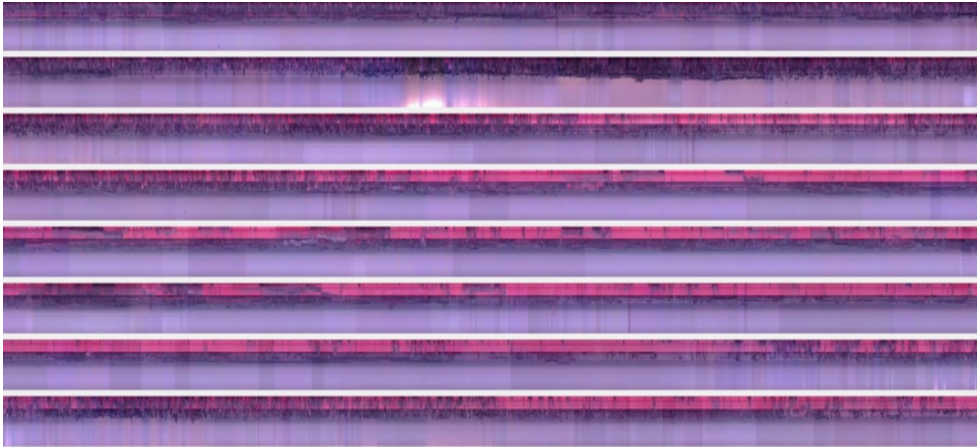
The onsite presentation will focus on a selection of highlights from the project, a range of large scale (wall)prints based on specific photo- and film material, a series of (small) installation setups and a publication as accompanying catalog.



Electron scan photograph of the pollen the bees bring back. At the left, 2 different pollen samples (yellow and orange), magnified 4000x and 1400x. Next to it, a fragment of a bee-antenna, magnified 3500x and 5000x. On the last picture we can clearly spot the small pollen-particles between the receptors on the antenna. (imaging facilities VUB Brussels, 2013)



The assortment of pollen collected by the city honeybees gives a colourful representation of the foraging areas and thus of our urban habitat.



A (slitscan) timeline representation of the development of a bee colony in an urban habitat. Webcams are integrated in the beehive and record in realtime the behaviour of the bees. Once archived in the pandora database (the online platform for collective annotation), the raw footage can be analyzed using the different features in timeline-view. (2011-2012)

more information:

More information on the OpenGreens project, the Bee Monitoring project, Corridors and Intelligent Beehives can be consulted online on following websites:

<http://opengreens.net>

<http://pandora.okno.be/grid/title/list==annemie:Connected%20Open%20Greens>

The Bee Monitoring research is ongoing, and covers following phases:

- phase 01: OpenStructures Warré beehive, in collaboration with fablab Barcelona and Self Sufficient Labs Valldaura

- phase 02: designs for guerilla beehives, in collaboration with Sony Computer Science Lab, Paris

- phase 03: pollinating the urban habitats, in collaboration with the Vrije Universiteit Brussels

- phase 03: haptic robotics, wax, vibrations, antennae and communication, in collaboration with Koç University, Istanbul

http://wiki.opengreens.net/doku.php?id=intelligent_beehives

Parallel to the Bee Monitoring, there is an ongoing research on urban agriculture and urban permaculture. Several community gardens are closely studied here:

<http://wiki.opengreens.net/doku.php?id=urban-artfarm-2012>

<http://wiki.opengreens.net/doku.php?id=urban-artfarm-2013>

CV

Annemie Maes is a media artist and activist, beekeeper, herbalist and gardener. She holds master degrees in fine arts and cultural studies.

Annemie Maes has had a fierce interest in transdisciplinary media arts since the 1980s. She co-founded the film production house Pix & Motion (1896). She was initiator of the artists initiative LookingGlass (1997). Together with Guy Van Belle and Gert Aertsen she set up Okno (2004 -), an artist-run organisation working with technology and ecology. In 2005 she starts So-oN – a production unit for collaborative art projects.

Her recent work focuses on OpenGreens, a transdisciplinary project at the intersection of art, biology and green technology, including urban agriculture and city bee-monitoring.

Former artistic research and cultural activism projects are cited as 'Politics of Change'. At the center are communities which are able to establish durable changes in society due to their structure and exceptional philosophy. This artistic research was collected in a series of documentaries, anthropological films and online database projects in which the connections between grassroots activism, eco-technology and women networks were investigated.