

Metabotanical: sound art and robotics in the garden

by Peter Courtemanche

In the summer of 2007, the Second Site collective presented a series of outdoor interventions and installations at the VanDusen Botanical Gardens in Vancouver. These artworks explored the connections between technology and our dependence on threatened green-spaces. The artists' inventions helped to illustrate simple mechanisms of nature as well as form hybrids between biological systems and electronic art. *Gregory's Sun Suckers* by Ken Gregory and *Preying Insect Robots* by Peter Courtemanche simulate life – placing electronic insects that communicate with each other into the landscape. *If plants could sing* by Diana Burgoyne and *Mend* by Robin Ripley form hybrids by merging electronics and fabricated materials with the branches and leaf systems of fruit trees. *Ponderer* by Matt Smith and *Resin Cloud* by David Floren are two quite different types of observers. One responds to patterns of light and shadow on a pond; the other counts minute particles of pollen falling mostly from giant evergreen trees. *The Beespeaker Project* by Lori Weidenhammer engages the public both through action (a performance adjacent to the apiary) and through the more subtle installation of the *Auditory Hive*.

Through these devices the art works play with ideas of fragility, the spectacle (or non-spectacle), and people's expectations of technology and nature. Most of the art works use materials and forms that resemble life – membranes, threads, skeletal structures, branches. The work then enters an in-between space – it is recognizable as man-made technology but it also has an uncanny biological feel to it. This type of structure lends itself to the outdoor environment. The ability to flex and bend; a power source that is too weak to short circuit in the rain; something that can bounce and spring – these are features that enable an object to survive surprises and changing environments. This process of mimicking biological structures also affects the relationship between the art works and the audience. The works exist to be experienced by the public, but they are not necessarily positioned as entertainment or entertainers. Most of the objects are placed as autonomous agents that live within the landscape like any other plant or animal. Ken Gregory explains the cycle of *Gregory's Sun Suckers*: "They aren't there to perform; they're just doing their thing." They follow their own process of waking with the sun, observing their surroundings, singing to each other, and then going back to sleep when the sun falls.

Gregory's Sun Suckers are a group of eight insect-like audio micro-organisms mounted on poles that are planted in the ground. The organisms live outdoors and are powered by solar energy. They measure ambient light and temperature and respond by singing a song that reflects the weather. Ken Gregory compares this to a cricket: "Some people say that if you pay attention to a cricket you can figure out what the temperature is going to be by the way it sings its song." Each *Sun Sucker* is able to listen and talk to the others. They work together to create a multi-layered sound scape of songs by passing information back and forth. This experience to the listener is somewhat like standing in a rural area filled with grasshoppers, crickets, birds or frogs. Distinctive sounds come from all directions but it is almost impossible to see the critters. In the hot sunlight, *Gregory's Sun Suckers* come alive with ever varied beeps and clicking songs. On cold, overcast days, they become more dormant.

In order to protect the pieces from the rain and watering-system at night, we would cover the *Sun Suckers* with clear plastic bags in the evening, and remove them in the morning. This daily ritual often attracted the attention of passersby who thought that we were doing scientific research – measuring something. In conversation, Ken explains how he uses some of the same instruments (sensor technology) as scientists, but he doesn't follow the scientific method. He isn't collecting data for quantitative study. His reference to the sound of the cricket as a means for predicting temperature relates to the loss of folk knowledge, or the ability to guess the weather and other environmental conditions from simple, natural phenomenon. Gregory is interested in the cultural shift from observing nature individually with our own senses to society's dependence on the instruments and authority of science.

Diana Burgoyne's piece also has a sense of measuring something, and attracts the scientific eye. She and Robin Ripley worked in the apple tree orchard, connecting and merging man-made materials into two trees. They collaborated on certain aspects of the work, with Diana focusing on electronics and Robin working with threads and "mending". Diana created a copper wire frame around an apple tree and connected it to Robin's darning – the use of conductive thread and wool to mend tears (wounds) in leaves. The piece used simple hand wired sound making circuits that measured the biosynthesis of the leaves and emitted a series of tones and clicks. The sculpture questioned technology's interwoven relationship with nature. Is the frame a skeleton, a crutch, or a cage? Robin worked on a second apple tree – mending leaves and attaching threads to the ground with needles. Small solar powered toy crickets were disembodied and used to animate thread and needles as the sun hit different parts of the tree during the day. The artists constructed the pieces during the course of the exhibition, spending a few days each week beside the apple trees, welding, wiring, mending, and explaining their process to passersby. Ripley explains how she reconfigures familiar things to explore how sensory information, knowledge and memory are all interwoven aspects of our experience. She is interested in the connections between economic models of speed and efficiency and the slower, organic changes that we see in the environment and our lives. *Mend* suggests that small gestures are transformative. It is important to notice the details of the world.

In my journal, for July 13th, I wrote:

"Diana and Robin are working on the borderline of Frankenstein's monster. Diana is encasing an apple tree in a copper wire exoskeleton with embedded electronic audio circuits. She stands by the tree with her propane torch, a coil of wire, and solder. The arborist mistakes a long black mark on the tree trunk for a burn mark (from the welding torch). In fact all of the fruit trees in this area have similar mysterious dark smudges on them.

Robin is mending leaves by darning over the spots that have been eaten by insects. Is she bringing the leaves back to life? She is interested in what people notice or how they notice the natural world. The leaf is very fragile. People look at a broken leaf and have various reactions – impassivity, acceptance, worry, desire to mend, etc. The mended leaf is odd, especially when

connected (via conductive thread) to Diana's audio moisture meter. In the morning when the dew is on the leaves the sounds are loud and frequent. By noon the piece is all but silent. When you touch the mended leaf it feels dry; when you touch a healthy leaf you sense more moisture. Although the mended leaf looks repaired, it is still mostly dead, drying out, ready to fall from the tree."

Madame Doolittle: The Beespeaker Project by Lori Weidenhammer was also presented in the orchard, to the south near the bee hives. Weidenhammer is foremost a performance artist. Her work comes from engaging a live audience and public. Her installation work and photographs invariably relate to a performance (public or otherwise) – a costume, a setting, an action. *The Beespeaker Project* blends her interests in the history of spiritualism (communicating with parallel worlds; most often with the dead) and her passion for food politics – supporting local farms, market gardens, sustainable agriculture, organic food, biodiversity, etc. The bees provide a link between the spirit worlds and the land – acting as guides, pollinators, measures of natural health and pollution. (Bees are very sensitive to pollutants). *Madame Beespeaker* enables the public to leave messages for the bees. This is an old folk tradition from the British Isles and parts of Europe that is based on the idea that bees are messengers to the spirit world. When you enter into the *Auditory Hive* you sit down on the chair in the orchard and lift the light-canvas hood over your head; you hear the recorded sound of hundreds of bees inside the hive and you smell beeswax – coated on the canvas and fixtures of the hood. The piece is meditative for some and intolerably creepy for others. Twenty feet away from the piece is a flowering Syringa tree that is often inundated with honey bees. You can stand inside a hollow spot inside the tree and hear the identical sound to the *Auditory Hive*.

The mythical basis of the piece is Lori's invention, Yolanda Doolittle – a fictional Edwardian entomologist and Theosophist who is reincarnated in the person of Lori Weidenhammer. Madame Doolittle is said to have developed a unique body of research into honeybee communication. As well as creating a system of notation for a language that combined human phonetics and musical notes with the buzzing and humming sounds of the bees, Doolittle developed a number of inventions for communicating with honeybees, including the *Auditory Hive* and the *Beespeaker Milinery*. The *Auditory Hive* is a canvas hood, shaped like a skep. It hangs from the branch of a tree over top of a round wooden chair. Audience members can sit, place the hood over their heads, and listen (and talk) to the bees. On the lawn, beside the tree, is a larger canvas skep (the size of a small tent) onto which participants can post messages to the bees. Lori performs the persona of Madame Doolittle and guides the public through the process of leaving messages while she discusses issues of biodiversity, agriculture, gardens, bees and other pollinating insects.

Unlike the works that merge with nature or try to simulate it, *Resin Cloud*, by David Floren, is a set of five sizable steel sculptures, obviously man-made and separate from the ecosystem. The sculptures work together to gather and observe minute particles of pollen that travel through the air. Placed within a grove of conifers, the piece uses four collectors that resemble wind vanes. Pollen from nearby pine cones and the surrounding undergrowth becomes trapped in a small vent at the front of each collector. The collectors

count the pollen particles and send this information via a radio signal to a mechanical seeder. After a certain amount of pollen has been collected, the seeder comes alive with a sudden efflorescence. Functionally, the seeder resembles a metal pine bough. It has a rectangular trunk, a tall stalk shooting upwards, and a cylindrical seeding cone at the very top. One of David's references for the piece is a photograph of a cone on a Ponderosa Pine releasing a smoky cloud of pollen. This is simulated mechanically with a sudden burst of yellow turmeric that explodes into the air for a few seconds and then blows away on the wind. The piece is a magnifier – taking the invisible particles that float through the air, collecting them, and intensifying them to trigger an event (a different cloud of particles) that the eye can see. At the same time, this event is infrequent. On a windy day it may trigger once an hour, and on a calm day less frequently. It can be a source of surprise or wonder. It can explode when your back is turned, or appear as a far off cloud of yellow, seen from a distance through the trees. It has its own sense of time and purpose.

Another observer, *Ponderer* by Matt Smith is a light-blue coloured paddle-wheel boat. It is a round catamaran with shallow, flexible paddle wheels on each side. The artist made some revisions to the piece during the show – from battery powered to solar powered; from lily-pad entangling to lily-pad avoiding. It became more and more comfortable in its surroundings with each new manifestation. The boat uses light sensitive sensors to follow changes in light and shadow. In this way it can travel through the ponds of the gardens while avoiding obstacles – the bank, ducks, rocks, etc. On bright sunny days, the solar-powered version can move quickly, often misdirected by the reflection of the light off of the waves. When the clouds roll in, the boat slows down and moves a bit more predictably. It is easy to stand on the bank and stare at the boat as it drifts and moves aimlessly over the water: sometimes bumping up against giant lily pads, cruising past the rocks where the turtles sleep in the sun, being checked-out by ducks and schools of black finned carp. Watching the paddle-wheeler is a bit like going down a river in a punt or row boat – one relaxes, admires the scenery, snoozes, and dreams. *Ponderer* moves through the water, reacting to obstacles and wildlife, but it doesn't have a particular destination in mind. Its reactions are simple, automatic, and in between these actions it has a lot of time to think. In the same way that Robin Ripley's mended leaves draw attention to that which is often ignored and invisible in a high-paced society, *Ponderer* causes people to slow down and participate in a different plane of thought and engagement.

The final work in the show (the piece I created) is *Preying Insect Robots* – a group of hand sized electronic creatures with waving branches for arms and metal-spring feelers poking out at the front. Shown in the gardens as a duo, the robots communicate with each other through a wireless Internet connection. They trade information about their movements and thoughts, sometimes engaging in synchronized dances. Behind their inscrutable electronic masks, they are writing poetry, based on simple rules for rearranging phrases from science fiction texts about artificial intelligence. This poetic train of thought is, of course, completely invisible to the audience. Once again, this is a piece that defies the viewers' attempts to watch it perform. It is a comment on the way that electromechanical processes can both mimic and integrate into life processes. The insect robot's usefulness and its position in the web of life is suspect. The small, electronic creatures are hard to

find, well camouflaged, and not prone to dramatic movements. People walk by without seeing or hearing them. Children stop and ask questions, sometimes pick them up, watch the arms jiggle, and then put them back down again. Often, I would hide the robots under a row of raspberry canes. People stopping to pick the berries would be suddenly surprised when the insects turned around and started waving their arms at them.

The expectation of the robot is that it will perform for us. Robots that are designed either for industry or as toys are typically constructed to fulfill a particular task – to manufacture, monitor, or entertain. An invention that simulates life or is given life often has an agenda of its own. It may be aimed at survival, or engaged in an invisible thought process. It can be likened to a butterfly: we can watch it passing, maybe see it feeding; will it land on your outstretched finger? But it doesn't recognize us as master, creator, or audience.

VanDusen Botanical Garden encompasses approximately twenty city blocks in the centre of Vancouver. Its accessible location and varied landscape provided a unique space for this type of electronic art. Having the artists on-site to meet and talk with the public proved to be an important part of the exhibition and process. The work was experienced simultaneously by significantly different audiences: the audience that came specifically to search-out the art work; the regular patrons and volunteers of the gardens who are knowledgeable about plants and the particular environment in which the art work was placed; and those who came as tourists and for other special events. In July, the gardens are often populated by wedding guests in fancy dress, travelers from other parts of the world, and families out for a day of relaxation. Some people shied away from the art work, not wanting to encounter anything unexpected in the botanical setting, and others became completely engaged in the art, traveling about the gardens trying to find all the different pieces. The orchard, in particular, became an informal gathering place. Home to the works of Diana Burgoyne, Robin Ripley, and Lori Weidenhammer, it became a place for the public to locate the artists, collect information, and begin their experience of the odd juxtaposition between electronic processes and the natural activities of plants and wildlife (insects, song birds, crows, herons, squirrels, turtles, and the black finned carp).

Peter Courtemanche, October 2007.

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