Truce: Strategies for Post-Apocalyptic Computation
Interactive Mosquito Installation by Robin Meier and Ali Momeni
February 2009 - Minneapolis, USA

For extensive audio and video documentation please visit http://robinmeier.net

Description

In their seminal paper "Flying in Tune: Sexual recognition in mosquitoes," University of Greenwich researchers Gabriella Gibson and and Ian Russell note an inspiring phenomenon: To find a partner of the right species type, male and female mosquitoes rely on their ability to "sing" in tune.
Mosquitoes vary the buzzing sounds they produce by changing the frequency of their wing beats in flight. This phenomenon synchronizes the male and female wing beats to within a millisecond or less, allowing a harmonized buzz and mid-flight copulation. Truce harnesses the mosquitoes' natural synchronization behavior to engage them in song — creating reciprocal musical interactions between insect and computer.

The computer produces a stimulus sound derived from the North Indian classical vocal tradition of Dhrupad.
Our three mosquitoes independently tune their buzz to the sound.
Triggered by the buzz, the computer produces three separate electronic voices — one for each mosquito — at the same pitch.

These three electronic voices move in and out of harmony with one another depending on the insects' ability to remain in sync with the stimulus sound.

Each mosquito is equipped with:
A loudspeaker that delivers the Dhrupad stimulus sound
A microphone to pick up the mosquitoes' buzz
A camera for giving us a closer look at the insects on-screen
A wire that contracts to let the mosquito rest every few minutes
A light bulb that brightens/dims as flight amplitude changes

Truce relies on the assumption that every living thing uses its environment as a tool to perform cognitive tasks. As such, our environment becomes a direct extension of the cognitive process. It effectively opens up the physical shell of our minds to include a much wider field of interaction.
With this externalist philosophy in mind, we envision Truce as a computing environment in which an artificial stimulus is, in turn, interpreted by the natural activity of living creatures. In this unique environment, the interaction between mosquito and machine brings forth musical motives and harmonies.

Note to the visitors

We invite our visitors to interact with the mosquitoes. This interactions must be gentle; we request that you limit your interactions to one of two possibilities:

1. *Offering a finger tip for the mosquito to land: slowly approach the mosquito from below and stop about 1/4 inch away from the mosquito. The mosquito will recognize the landing spot and extend his/her legs to reach you.*

2. *Exhaling on the mosquito: the carbon dioxide in our breath excites and entices the mosquitoes.*

Please avoid applying pressure to the mosquito, touching its wings, or touching the wire to which the mosquito is attached. These actions can hurt the mosquito, free the mosquito or produce undesirable sounds.

Tech Rider

Maintenance
The mosquito cage has to be stored in a space not too dry. the mosquitoes have to be supplied with a fruit, cotton and sugarwater.

Daily Maintenance (ca. 30 minutes)
- twice a day: catch 3 mosquitoes and attach them to a small wire with a drop of bees wax
- attach these 3 mosquitoes inside the Truce sculpture
- plan for daily access to some ice to anesthetize the mosquitoes that need to be attached

these manipulations can be thought to the exhibitor in ca. 2h.

Space requirements
minimum 3-5-3 meters (w-l-h) silent space dark enough for video projection
rigging to hang 3 lightbulbs and attach 1 video-projector

we need 1 extra space near the exhibit space to store and manipulate the living mosquitoes. This space can be visible to the public.

Equipment
The 3 Truce Sculptures are provided by Collection Laurent Dumas. Contact Mlle Stephanie Dumas <sdumas@emerige.com> for more information regarding insurance and shipping.
Depending on geography and season mosquitoes have to be supplied by a laboratory. A lab in Poitiers could supply sufficient mosquitoes for 7-10 days. For longer shows Institut Pasteur in Paris can be contacted. Prices to be negotiated.

To be provided by exhibitor:
1 Videoprojector
3 amplified full-bandwidth speakers
1 audio interface (for short shows, this can be provided by the artist)
2 MacMini 2.4Ghz 4Gb RAM or equivalent (ex. 1 powerful MacPro)
long VGA cable from Computer to Projector
XLR cables from Computer to Speakers
220V stabilized and protected power

Awards, Financing and Exhibits
Truce: Strategies for Post-Apocalyptic Computation won a honorary mention at Ars Electronica 2009 in the electronic music category. It's initial production and exhibition in Minneapolis (Spark Festival) was co-financed by Pro Helvetia and the University of Minnesota. The piece was shown at SIGGRAPH Asia in Yokohama, December 2009 and at the Palais de Tokyo in Paris for the Dynasty show from June to September 2010.