

## Caresses de Marquises

*Caresses de Marquises* was created by Frédéric Voisin and myself for Nuit Blanche, October 2 2004 at Gare de l'Est in Paris. Nicolas Frize was artistic director for this coproduction of the city of Paris, SNCF, SACEM, Art Public Contemporain and CIRM.

The technologies developed for this project have evolved quite a bit since 2004 and its scale is smaller than the project called *Symphonie des Machines*, which is similar in principle though.

However, i believe that this project already shows some aspects of my work which are still important to me today and which reappear across several of my projects: **communication** (machine-machine, man-machine, fish-machine, etc.), **emergence** (of musical structures, language, choreography, visual narratives, etc.) and the use of **technology** to investigate these subjects, notably through the use of techniques developed in modern artificial intelligence.

Documentation on paper includes:

- description from the Nuit Blanche catalogue (french)
- letter of intent
- photos

Documentation on CD includes:

- video from Nuit Blanche
- sound excerpts from rehearsals
- a paper explaining compositional techniques using neural nets for "For Alan Turing"
- "Mémoire technique" in french for my conservatory diploma. This paper documents my implementation of a self-organizing map in Jitter: "jit.robosom"

## H21

### Gare de l'Est Rue d'Alsace

Rue d'Alsace, 75010  
M° Gare de l'Est



### Caresses de marquises

Robin Meier et Frédéric Voisin

Directeur artistique **Nicolas Frize**

> **expérimentation musicale**

Depuis la rue d'Alsace, qui borde la Gare de l'Est, s'ouvre un plateau de marquises alignées côte à côte, longs toits formant une forêt horizontale et longiligne, protégeant les quais des voies de chemin de fer. Au lointain, les immeubles dessinent une fresque large et immobile. Se dégagent de ce lieu inattendu et calme, des "êtres sonores" constitués de neurones artificiels, qui naissent, se développent, puis se meuvent, s'individualisent.

Au moyen d'un apprentissage - par adaptation et mimétisme - ces sons vivants et mobiles font émerger d'étranges langages qui se propagent, partent au loin et disparaissent.

L'œuvre est ici non seulement inventée mais apprise et développée en temps réel.

Avec le soutien de la **Sacem**

## Letter of intent

Caresses de Marquises is a sound-installation for artificial neural networks presented at Nuit Blanche 2004 at Gare de l'Est in Paris. This work was conceived and realized by Robin Meier and Frédéric Voisin, artistic director was Nicolas Frize.

During la Nuit Blanche we experiment with the behaviors of neuro-mimetic agents, represented by loud-speakers placed on the roofs protecting the Gare de l'Est's railway lines. The agents live in an environment consisting of projectors, which are placed next to the loudspeakers and on which we generate rhythmic light patterns.

This musical experiment allows us to hear the emergence of structures and artificial language-like forms of communication amongst different artificial agents. These phenomena occur naturally through the evolution of our biological simulations, who are capable of learning and imitating through observation, classifying sensory stimuli and remembering and forgetting perceived events.

Different species of agents distinguish themselves from each other through their neural architecture, their sensibility towards different aspects of their environment and through the sounds they are able to make.

Each agent has two cores of about ten to twenty artificial neurons each, depending on the species. The two cores are interconnected in a feedback loop and represent two kinds of internal

states of the agents: one being sensitive to the external environment (lights and sounds) the other one - more intimate - moderating the activity of the first one.

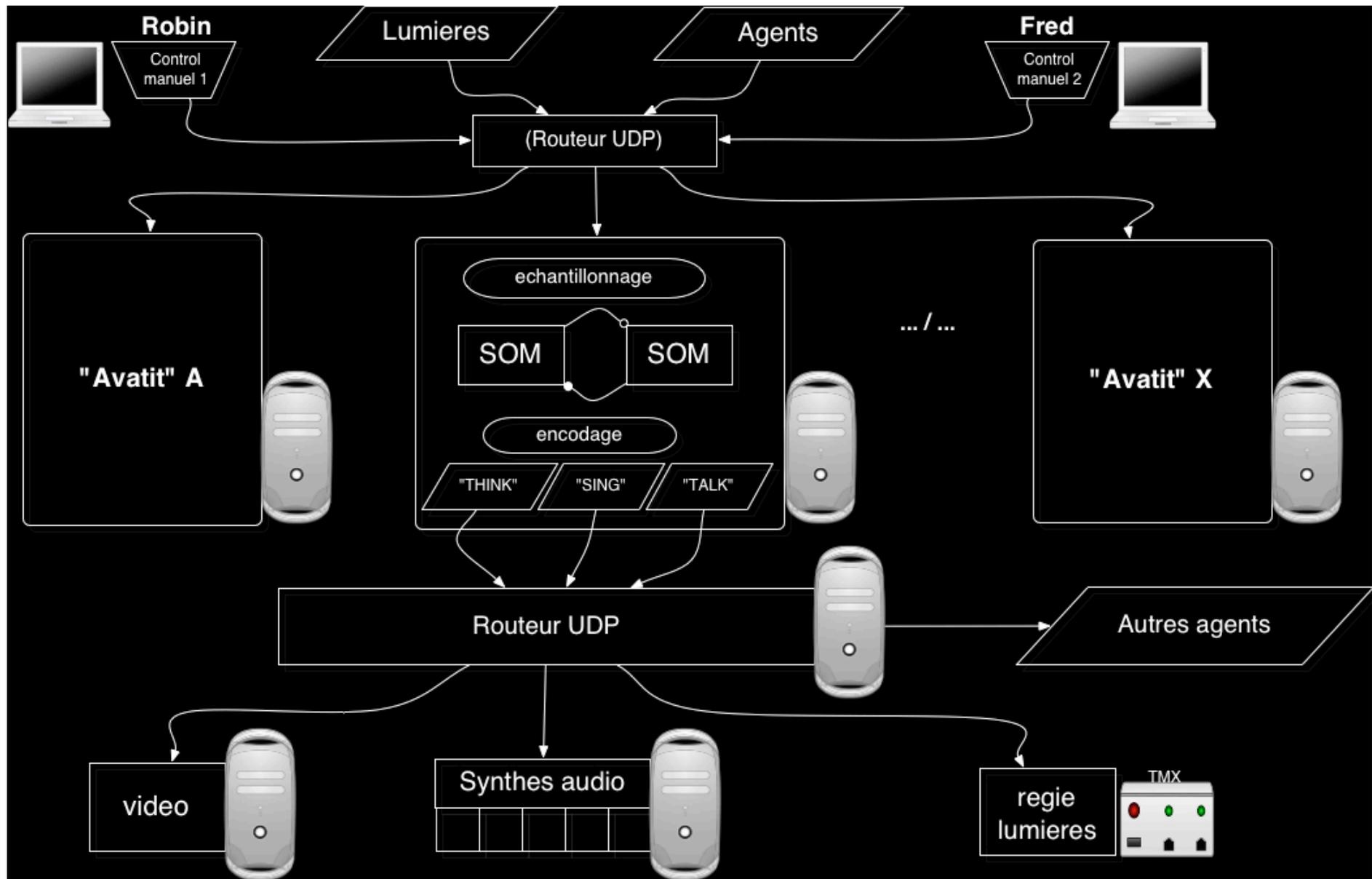
All night long these agents react to the visual rhythms generated by the projectors, which are placed on the roofs next to the speakers and to the acoustic signals of the other agents.

Different declinations of neural architectures generate different behaviors and by consequence different styles of acoustic signals. All the motives and sequences emerge autonomously according to the internal states of an agent. It is through this agents interpretation that a non-linear, associative connection comes forth between the rhythmic light patterns and the sounds produced by the agents, much like a visual-acoustic counterpoint.

In Caresses de Marquises the study of the relationships between simple neuronal structures, an agents behavior and his ways of producing sounds are an integral part of the compositional process. The way we structure and control the performance is not through determined, immediately executed commands. On the contrary, we influence the agents behavior through changes in their environment. We interact with this rich system through signs and indications which are then interpreted by the artificial neural networks thus experimenting with new ways of man-machine interaction.



Aerial overview of Gare de l'Est. Projectors and Loudspeakers were placed on the roofs covering the railway lines. The public was located along rue d'Alsace which borders the railways (top right corner on photo).



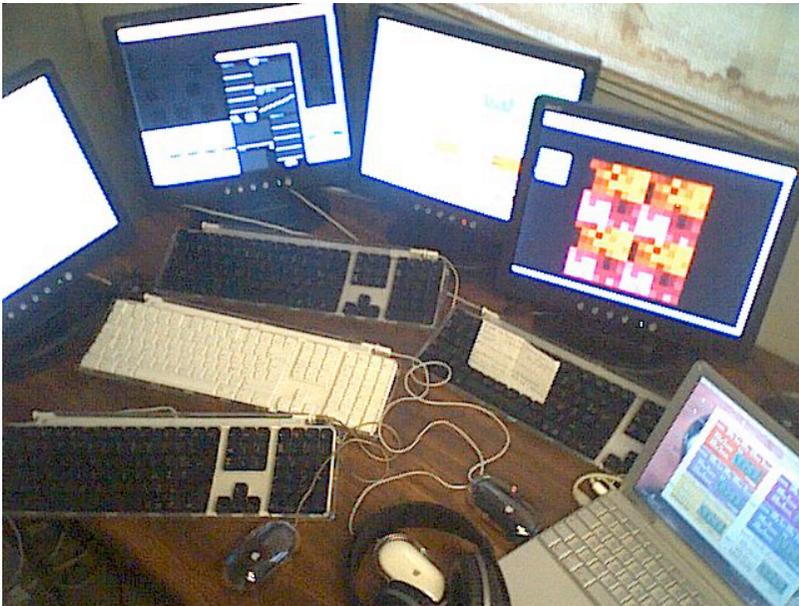
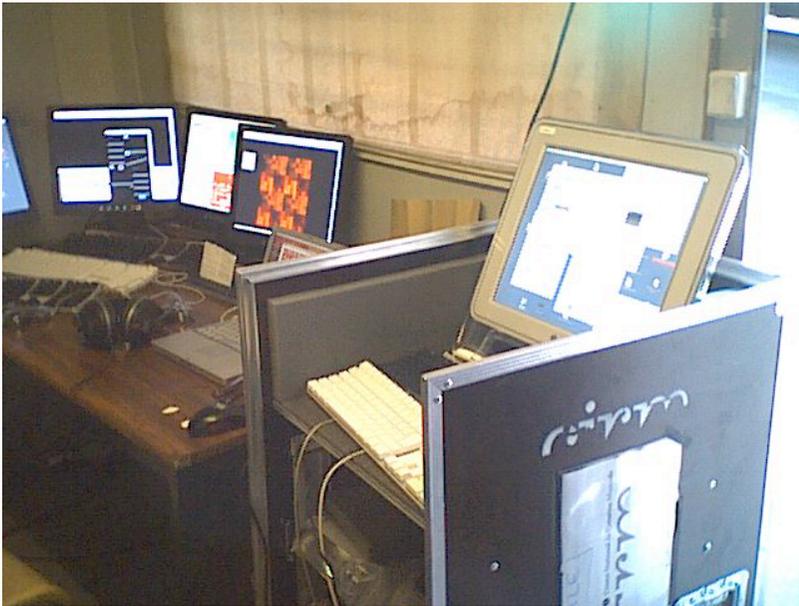
Schematics for the IT setup. Control data coming from Fred and myself as well as stimuli from the environment (lights and sounds from other agents) are routed to the machines on which the agents ("avatits") are running. Each "avatit" consists of two cores (self-organizing maps - SOM's) and generates control data for his synthesizer. Internal states of each "avatit" are visualized on a video screen. The computer routing these data streams also controls the lights via a MIDI-DMX interface.

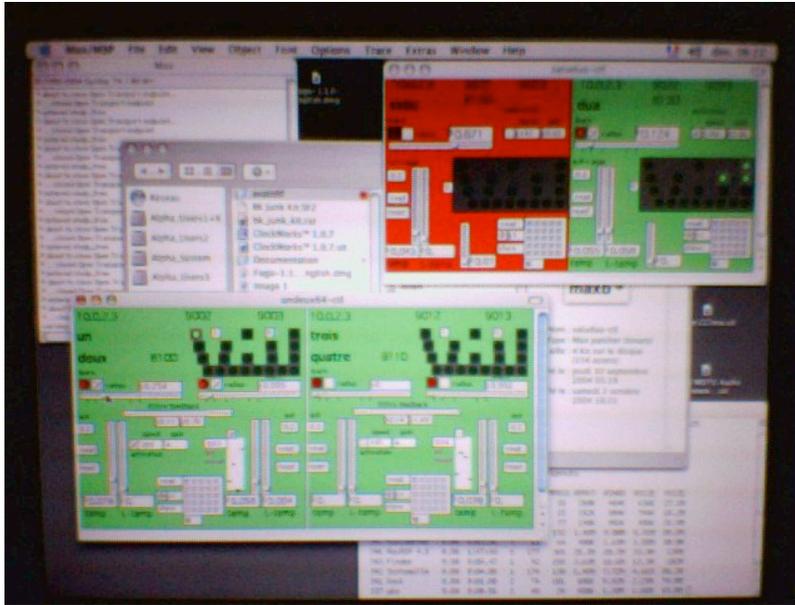


Container situated in the hall of Gare de l'Est where during two days and nights we finalized machine setups, code, MaxMSP patches for audio synthesis, etc. On October 2 as all the machines were ready, everything was transferred to the SNCF offices overlooking the railway tracks.



Computer setup in the container (left) and in the SNCF offices (right)





MaxMSP control interfaces for different agents. All the controls for agents and lights are sent via UDP.

