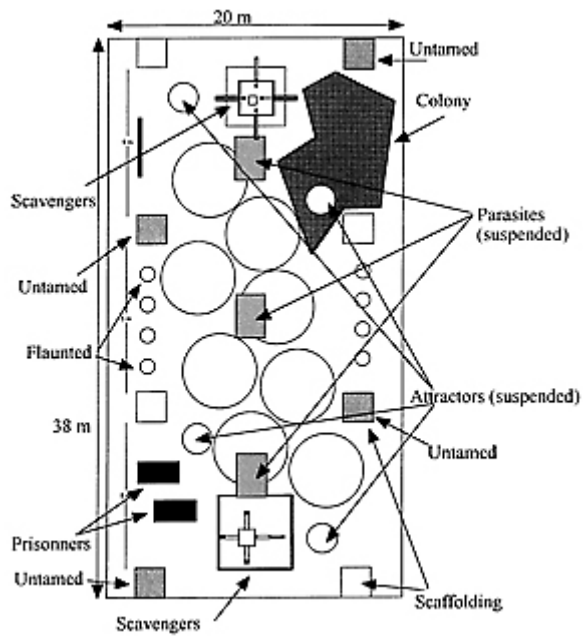
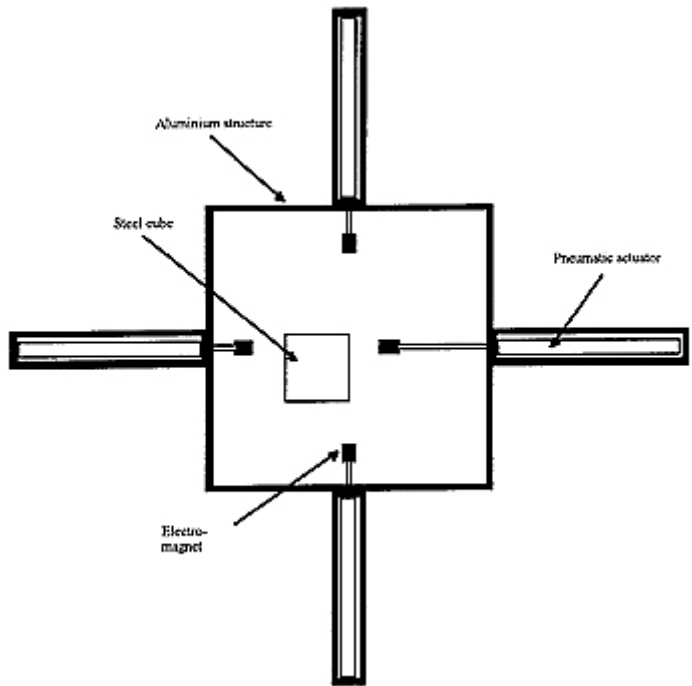
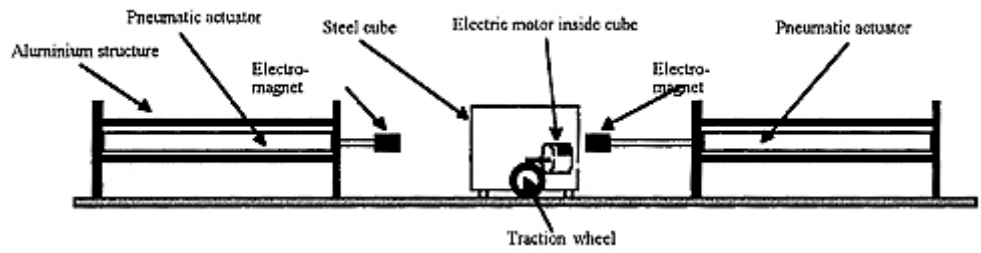
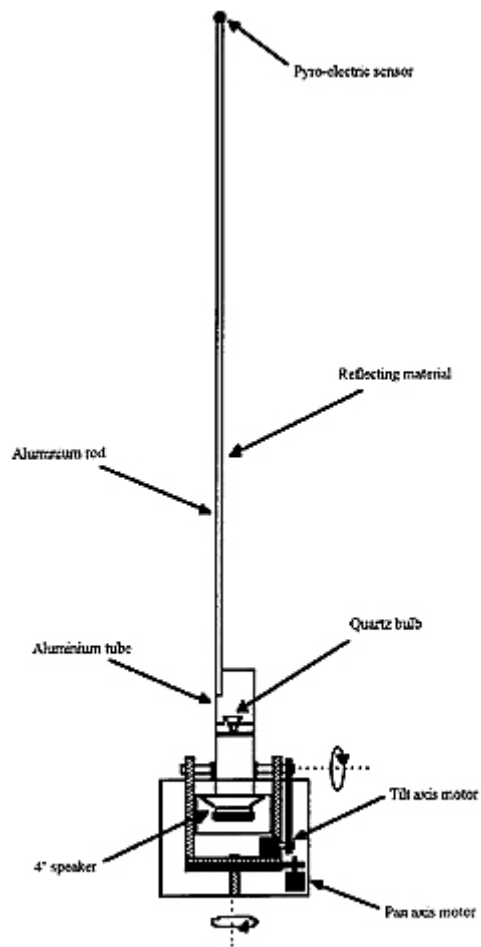


No Man's Land

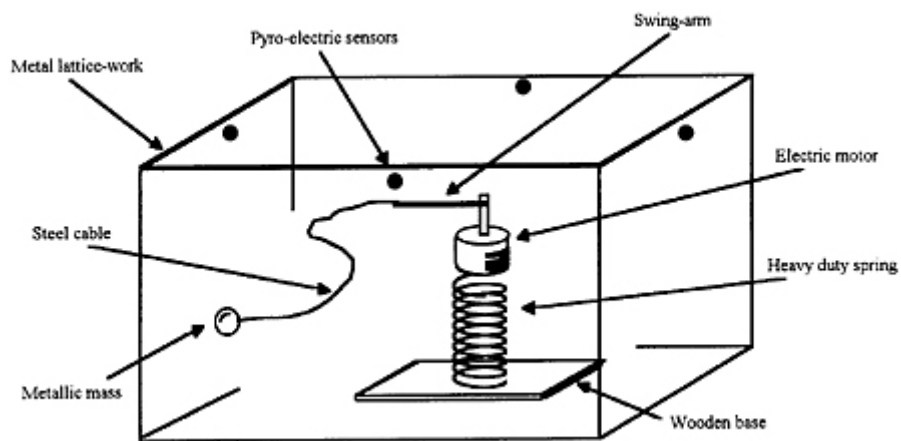
Louis-Philippe Demers/Bill Vorn

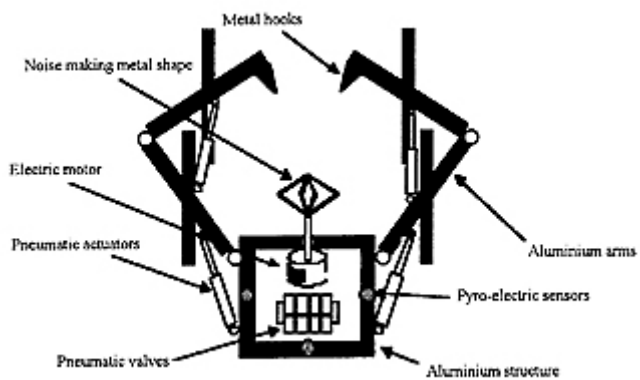
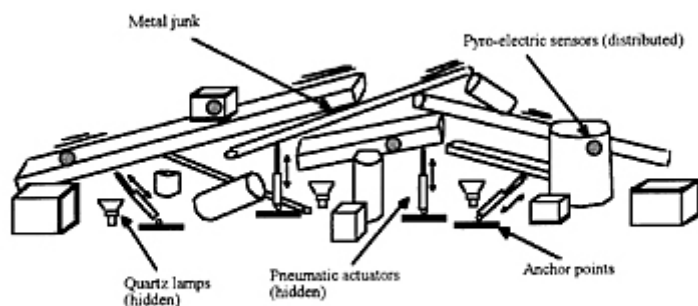
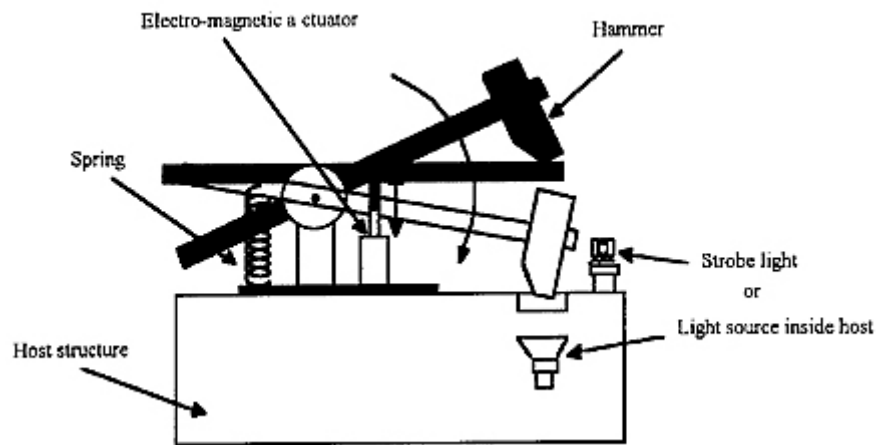


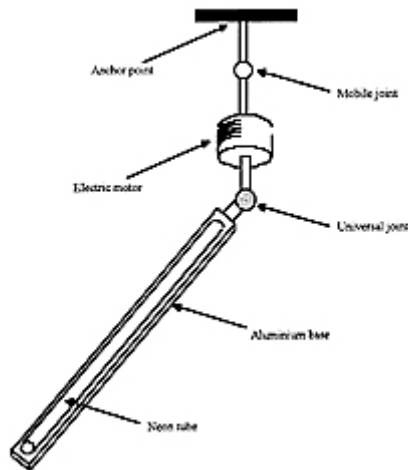




Attractor - robot section.







Through robotic installations, we pursue our researches on intelligent environments and life embodiment into matter. We regard machines as distinct entities from us, as much as we consider ourselves distinct from nature. Machines, through the ages, can be seen as an inner intermediate dialogue, in which they appear as the physical rendering of abstraction and also as the comprehension of ourselves within the structure of the world.

First considered as the main intent of the human quest for its artificial double, machines now tend to become autonomous entities, leaning towards the behaviour of real living individuals.

We do not intend to simulate nor physically reproduce real life animals but we rather deal with simplistic behaviors engendered by primitive mechanical animats. Shapes move from primitive abstract objects [spheres, cylinders, sound, light] to kinetic and complex organisms as polymorphic patterns.

We present robotic machines not as specialized and virtuoso automata but rather as expressive animated artworks. We also explore the reformulation of sound and light applications by simulating organic and metabolic functions and by creating dynamic virtual architectures.

In addition to the intrinsic mechanical noise, loops and repetitive textures of both organic and metallic sound objects are part of the installations soundtracks, a collection of numerous heteroclit elements chosen for their evocative properties. The goal is to disfigure the inherent nature of the sound samples and to create a peculiar ambiance proper to the metaphoric habitat of machines.

Movement itself can be seen as the objective nature of the machine while its perception [from the viewer] is its subjective counterpart. The hyperreal simulacra of the robot world goes beyond the unreachable simulation of life on a computer screen. Robots are not only a virtual model, a pattern in space and time, but also a dynamic and evolving phenomenon embodied in matter.

The replication of machine-organisms is a fundamental concept. Ecosystems are obviously based on population [gender and number] and their complexity is obtained from multiplicity of the inherent interactions.

The perceived emergent behaviors of these machines produce a multiplicity of meanings based on single dynamic pattern of events. Real Artificial Worlds engender the paradox of

simultaneous illusion and reality by a complete immersion of the viewer in a metaphorical but physically responsive -environment.

No Man's Land

The concepts of *No Man's Land* follow the basis of our exploratory work on invented and immersive metaphoric environments via the utilization of machines, referred to in the text as robot-organisms, that produce movement, light and sound as their "living" functions or invented metabolisms. Our works propose real artificial life as an immersive media. *No Man's Land*, from its own name, invites the viewer to consider an invented habitat solely made for the robot-organisms.

The installation replicates elementary robot-organisms, hence building a fictitious society or robotic ecosystem. By experiencing these environments with the entire body, immersed in this simulated world, the audience believes in the simulacra. *No Man's Land* will be deployed in a site specific location [near the Ars Electronica Center, under the bridge or in the garage], an ideal place to recreate the dark and hazy world of the robots.

The conceptual framework of our researches is based upon Artificial Life, immersive environments, connectionism, reactivity and artificial behaviors [implanted and emergent]. We present here our interpretation of these domains in respect to our intentions of producing an aesthetic media out of machines.

The machines are reduced to their most nominal expression to implement their intended behaviors. For example, a simple hammer machine becomes at the same time a rhythmic element and a parasite when installed judiciously on another robot-organism. In this project, the behaviors of each species are seen as a common thread for design of the robot-organisms.

No Man's Land evokes, through various robotic species in a common environment, a fictitious habitat of a large robotic ecosystem. As opposed to our previous works [*Espace Vectoriel*, *The Frenchman Lake*], the robot-organisms are not only replicated in number but also in gender [or species]. The robotic genders are designed following their behaviors in the habitat and they are metaphors of natural societies: parasites, scavengers, colonies, herds, etc.

Real Artificial Life as Invented Robotic Ecosystems

The machines can be seen as virtual organisms that move and produce sound and light as the outcome of their invented metabolisms. In this sense, we do not intend to simulate or physically reproduce real life animals but we deal rather with simplistic behaviors engendered by primitive mechanical animats. This metaphor feeds on the organic sounds and movements in order to create an hybrid world between nature and the artificial.

The concept of replication, therefore a large number of machine-organisms, is fundamental to this project. Ecosystems are obviously based on population [gender and number] and their complexity is obtained from multiplicity of the inherent interactions. Furthermore, the illusion of life would not be as convincing if there were only a few units, limiting the combinations of possible states of the system which are consequently perceived as behaviors.

Since one of the forefront aesthetic choices of this work is the evocation of life through abstract, even displaced, bare inorganic skeletons, the machines are kept deliberately

simplistic. Non-anthropomorphic shapes move from primitive abstract objects [spheres, cylinders, sound, light] to kinetic and complex organisms [polymorphic patterns].

Robotics, sound & light as an immersive media

Sound and light are natural immersive medias. They spread in all directions without the need to be artificially rendered in a virtual manner. Each organism of this installation emits sound and light on an individual and specific basis to produce a general polymorphic ambiance that entirely surrounds the viewers. As a result, the guests become part of an environment where every point of view has something new to offer. The objects of kinetic art, robots, machines and artifacts, feed on the concept of continuous transformation and participation of the viewer.

In creating this site-specific habitat, we promote an endogenous situation where the viewer is immersed within the site. The viewer is not only presented to a central object but involved within a whole environment which, in turn, becomes the object. The transformation of an inert site into a reactive locus will force the viewers not only to consider a society of machines but also an habitat made for machines where their sole presence will disrupt the system and engender reactions.

Reactivity

In the reactive model of man-machine interaction, the viewers do not gain control at their leisure and will over the self-steering system but, instead, influence the unfolding of high level events [expressed by its behaviors] through their simple presence and movement. In many ways this communication scheme seems closer to the relationship between living organisms and their environment compared with the usual interactive model found in hypermedias where the system is usually waiting for a command from the user in order to react.

In a reactive context proper to autonomous systems, the objects react at their own will, between them and without the presence of any viewer. Interaction starts at the lower levels of the structure [between task-action agents deep inside the program core] and evolves in complexity up to a close relationship with the nearby environment.

Implanted and emergent behaviors

Implanted behaviors are individual reactions engendered by simple rules and conditions intentionally programmed in the system. They are easy to anticipate because they are a direct response to a precise triggering cause. Low-level agents are responsible for producing these comportments.

Emergent behaviors are group reactions engendered by the sum of all the individual reactions. They are much more difficult to foresee because they depend on a global interpretation of an exponential number of possibilities. These comportments are derived from the dynamic and complex interactions between low-level task agents.

To summarize, the machines themselves can be seen as a form and function relation based on their behaviors' prerequisites: rhythmic characteristics, complexity of motions, responsiveness, and imbrication of medias [sound, light, sensor] within the organisms' physical structure.

No Man's Land — Overview

No Man's Land regroups nine different species dispersed into the whole installation site. The species are composed of more than 50 independent robot-organisms cohabiting in the space. The viewers can walk freely around the robots and their presence is detected by a set of 64 sensors cells distributed on the machines and into the space.

The species are:

The Herd — A group of eight long tubes flocking together.

The Attractors — A group of four swinging lights, suspended in the air.

The Parasites — A set of sixteen percussive units hook onto other machines and structures.

The Prisoners — Two robots crawling on the floor retained by their cabling.

The Colony — Eight invisible machines living in a pile of metal junk.

The Flaunted — Eight suspended machines, dripping water to flaunt mates.

The Scavengers — Two groups of scavengers fighting over a piece of metal.

The Untamed — Four robots frenetically banging their cages.

The site layout will comprise eight scaffolding towers to host species and act as hanging points for suspended equipment [robots, lights, speakers, etc.]. These towers are also the background set inside the tunnel. The pairs of the outside towers can act as walls with suspended fabric to isolate them from the surrounding area.

The figure [next page] gives an approximate floor plan of the installation. In order to fully populate the tunnel, the required "floor" area is large and we also distribute some robots in height.

No Man's Land — Species Description

The Scavengers

In the metaphoric world of *No Man's Land*, there are two different sub-species of Scavengers: the normal Scavengers and the inverted Scavengers.

The Normal Scavengers

Four machines seem to fight for a piece of meat or dead animal like bulky and noisy scavengers. The piece of meat is a steel cube simultaneously pushed back and forth by four electro-magnets bolted on 1-meter pneumatic actuators. The cube has been given life by a small electric motor mounted inside, making it move in front of the actuators like prey trying to escape from its predators. The basic mechanism of the normal Scavengers is part of the *At the Edge of Chaos* installation. The normal Scavengers' space looks like a small boxing ring. Viewers can walk freely around the ring, triggering reactions from the system. The robots' behavior is sometimes altered by the viewers' presence and sometimes totally independent and autonomous.

The Inverted Scavengers

The Inverted Scavengers are exactly like the normal Scavengers except that the four pneumatic actuators are now part of the cube instead of being fixed on the ring. There is also an electric motor inside but the actuated electro-magnets are replaced by rubber bumpers that make the cube react frenetically like frightened prey caught in the predator's trap. The Inverted Scavengers' space is almost identical to the normal Scavengers' and the interactivity mode is the same.

The Herd

The eight Herd individuals are long 2.5 meter thin metal rods standing vertically on one end and moving slowly up and down and in a 360° circle. At the base of the rod is a speaker and a quartz lamp that lights a reflecting material fixed on the rod. The basic mechanism of the Herd unit is part of the *Espace Vectoriel* installation. At the open end of the rod is a pyro-electric sensor that detects the presence of the viewer, triggering specific reactions [movement, sound or light] from the robotic organism. Because of their length, the Herd needs an important part of the overall space.

The Untamed

The four Untamed are simple but ferocious organisms. They are basically composed of a metallic mass attached to an electric motor mounted on a heavy duty metal spring. These organisms are imprisoned in large cages [made of steel lattice-work] surrounded by infrared sensors. They spin their counterweight on and off against the fence walls producing violent movements and a lot of frenetic noise when the viewers are passing by.

The Parasites

The Parasites are small and simple robotic organisms disseminated all over the installation space. They are little hammers triggered by an electro-magnetic actuator, always producing sharp percussive sound and sometimes emitting light by uncovering a hidden light source. The Parasites are synchronized by the main computer, generating complex rhythm patterns. These patterns are altered by pyro-electric presence-sensing near each Parasite.

The Colony

The Colony lives in a pile of metal junk somewhere in *No Man's Land's* space. They are basically invisible organisms, only their presence can be detected by the viewers passing by and triggering sudden movements in the junk pile. The Colony is in fact a group of small pneumatic actuators and air valves agitating the various metal parts of the pile. In this way, the viewer feels the presence of a living organism without being able to recognize its identity.

The Attractors

The Attractors are rotating light sources fixed to or hanging from the ceiling. They are composed of a neon tube attached to an electric motor by its own electric cables. The neon tube is mounted on a revolving electrical contact, permitting infinite spinning of the unit.

The Prisoners

The Prisoners are semi-autonomous organisms moving freely in a specific area, only retained by their own control cables. They are metal structures crawling helplessly away from the viewers using small pneumatic arms. Their movement is slow and chaotic by nature, but they react almost like real captive animals. Some pyro-electric sensors detect the presence of viewers around the organism, triggering the escape process.

The Flaunted

The Flaunted are water valves hanging from the ceiling and dripping into metal drums disposed on the floor. The dripping is computer-controlled using electric water valves. Underwater lamps illuminate the waterfall from inside the drums, creating reflections and various lighting effects.