

Interactive Automata

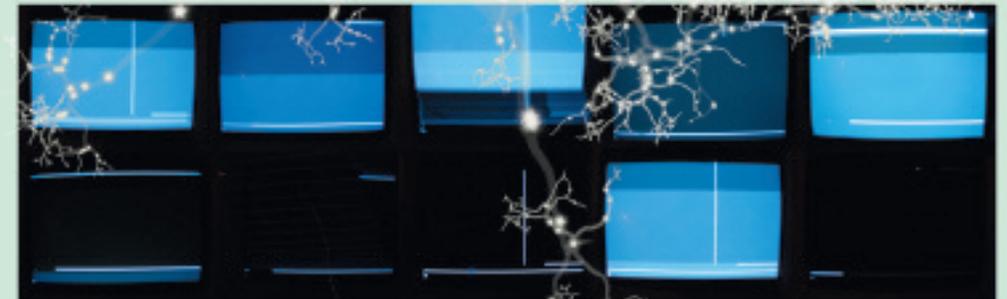
[Art Projects by Garnett Hertz, Code31, Antoine Schmitt,
Donna Conlon, 5VOLT CORE, Zachary Lieberman and
Übermorgen with Alessandro Ludovico and Paolo Cirio]



Garnett Hertz, *Experiments
in Galvanism* (2003–4)

The Italian physicist Luigi Galvani lent his name to the phenomenon we call galvanism: the generation of an electric current by means of a chemical reaction. In 1786, Galvani made a dead frog's muscles contract by touching them with a piece of metal. The public display of scientific tests and experiments that occurred in the 18th century can be regarded as a precursor of electronic art. The American artist Garnett Hertz explicitly relates his work to this idea and performed an update of Galvani's experiments called *Experiments in Galvanism*. Hertz implanted a minute web server in the body of a dead frog immersed in a liquid under glass. The web server was connected to the Internet by an ethernet cable. When the web server registered a hit, the frog's left or right leg would contract. More than just serving as tangible evidence that we can act from a distance (*Experiments in Galvanism's* interactive component is limited), this work is about connecting biological systems to technological ones: frog to Internet, nerves and muscles to electricity and cables. It shows us that the gap between wetware and hardware is not unbridgeable. More than that, it reminds us that electricity is a natural phenomenon – Galvani saw it as the fluid of life – and that the history of its discovery began in experiments with organic tissue.

Lately many artists (and hobbyists) have been discovering the potential of old electronics and cheap consumer appliances. They're rediscovering the possibilities offered by simple resources – electricity, resistors, cheap PCBs. Playing with the discarded mountain of obsolete computers sparks their imaginations and yields ideas and artistic concepts. The Belgian group Code31 recently got its hands on a bunch of discarded Mac SE30s. Out of these they built the installation *SE/30*, based on the principle of cellular automata. Each computer functions as a cell in a network. Every cell generates images (black-and-white) and sound (MIDI) on the basis of local laws (those of the individual cell). Each cell interacts with the adjacent ones and



Code31, *SE/30* (2006)

changes on the basis of this interaction. Constantly changing patterns thus arise. Their course is unpredictable and chaotic. Faithful to the starting assumptions of media art, which takes an interest in obsolete technology and circuit-bending, Code31 considers all errors and glitches that arise to be necessities that characterize the aesthetic of the piece. "The tool [not the medium] is the message," as Kim Cascone wrote in *The Aesthetics of Failure*.

World Wide Ensemble, by the French software artist Antoine Schmitt, is an abstract, programmed landscape of visual elements and sound. The visual elements, white, and gray on a black background) move quickly up and down or back and forth or make continual quarter turns against a black background. They are a kind of small automata, each with its own simple behavior. Sometimes they seem to join together to form a motor, an electrical diagram, or a rudimentary blueprint for a machine. They move past slowly as the viewer watches through a hole in the wall, as if looking out on the universe through the porthole of a spaceship. The only interaction between the viewer and the work takes place by means of a trackball he or she can use to navigate and investigate other parts of the landscape. Because the relationship between image and sound is not completely synchronous, and the consequences of the interaction are not processed immediately, a certain tension arises, allowing the user to form thoughts on the generative aspects of the work. We can read its elements as actors that make up a world and move together against their endless black background.

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Antoine Schmitt, *World Wide Ensemble* (2006)



Donna Conlon, *Coexistence* (2003)

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The literature on emergence and self-organization tells us that interaction between simple elements, each functioning according to its own simple rules, can give rise to complex behavior without there being any central controlling force. The cellular automata in *SE/30* function in this manner, to which *World Wide Ensemble* also refers. Ant colonies are a classic example – strictly regimented "societies" with a kind of collective intelligence produced in the interaction between the simply functioning ants. In *Coexistence*, a short film by Donna Conlon, an American artist living in Panama, we watch a parade of leafcutter ants moving through the rainforest for just over five minutes. Most of them are simply hauling bright green leaves (leafcutter ants collect leaves and transport them to their nests), but here and there we see an ant carrying the flag of a country such as the Netherlands or Ukraine, or one bearing, say, a peace sign. The ants march under the banners of nation-states without there being any visible consequences. They do not work together any differently, nor do they fight. Is this a take on the self-organization literature? Perhaps not. Rather, it is about the subtle discrepancy between the ants' collective behavior and the flags, signs of ideologies from the human world that look somewhat absurd here.



5VOLT CORE, knife.hand.chop.bot (2007)

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Who shows the greatest disregard for the danger of injury? Who can keep a cool head the longest? Human beings can keep up appearances, carrying on while their bodies tell a different story – when you become anxious, nervous or frightened, you begin to sweat. The collective 5VOLT CORE, made up of several artists whose interests include circuit-bending and lo-fi technology, have built a machine for testing how well you keep your nerves under control. You place your hand on a table under a machine to which a knife is attached. You splay your fingers, and the knife starts to tap the table between them, slowly at first, and then faster and faster. The table measures the moisture on your hands. When you start to sweat, contacts are activated and the machine starts to act strangely and is disrupted. This is direct interaction – based not on conscious choices by the user but on physiological data over which he or she has much less (or no) control. The system is simple, but the machine challenges you.

drawn is an interactive installation in the purest sense. In fact, it is a script – to stick to the terminology of interaction design – in which shapes drawn in ink on paper come to life on a screen and respond to the hands that have drawn them. The drawings on the paper are also visible on the screen. When the visitor touches the drawings on paper, they come to life on the screen, and can be moved and reshaped. It is real-time animation whose viewers become performers. If there is no action by the user, nothing happens in *drawn*; it is nothing but a technical assembly of paper, drawing supplies,

tracking camera and software. Whether the user does anything, and whether anything comes of that, depends completely on the system's appeal and its responses. *drawn* creates an infectious dialogue that leads to an interactive animation you can play with. At the very least, it elicits a smile or an experience that puts you in a good mood. Perhaps you even rediscover your own creativity. *drawn* is a typical product of the American school of interaction design. It is subtle and designed to create a positive, delightful interaction between human and machine. What it evinces is not so much a belief in the blessings of technology (its makers know the quirks of computers too well for that) as a belief in human creativity. *drawn* was devel-

Zachary Lieberman, drawn (2006)



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oped by Zachary Lieberman, who previously made *Messa di Voce* with Golan Levin. *drawn*, like *Messa di Voce*, has a magical quality. A drawing comes to life and can be manipulated on paper. This is astonishing; your jaw drops and you want to play with the piece. Lieberman originally developed *drawn* for performances with the Japanese musician Pardon Kimura. Members of the audience would always come up to him after the concert to see how it worked and ask to try it themselves, so he decided to make an installation version. It will come as no surprise that *drawn* has been a success in workshops with children as well as allowing adults to rediscover the pleasure of drawing.

On Amazon, the leading online bookseller, the "Search Inside This Book" function allows customers to look through PDF versions of books within the company's site. Unfortunately, you can only see a few pages. How annoying it is to have to stop browsing after four pages or so when you know the whole book must exist in electronic form on Amazon's servers. (Amazon requires that a complete scan of each book be provided). The annoyance becomes even greater once you realize that Amazon's "Search Inside" function is playing a part in the fight over access to electronic versions of *all* books. Google and Amazon have been active in this fight for some time. Who will be the one in possession of the content and technology to offer people online access to book collections? Amazon and Google already have the infrastructure in place. But in 2006 Amazon Noir appeared on the scene. It was a project of **Übermorgen** – Hans Bernhard and Lizvix (both known as etoy) – together with **Alessandro Ludovico** (editor-in-chief of the magazine *Neural*) and the programmer and activist **Paolo Cirio**. They hacked the "Search Inside This Book" service using software they had written. They sent the system countless queries until they cracked its security and were able to "harvest" the scans of 3,000 or so books, of which they made PDFs. They publicized the action, sparking heated discussions in the media, while Amazon tried to buy them off. In its own publicity materials, Amazon Noir presented the action as a dramatic adventure story, with bad guys (the Robin Hoods of Amazon Noir) and good guys (Amazon). The story makes clear once again how closely issues of copyright and access to information are tied up with business interests. It shows that it is not purely a question of the law but of investment, the building of infrastructure, and the development and delivery of technology that could end up as the de facto determinant of how, and at what price, we access knowledge in the future. As things stand now, Amazon and Google are hard at work determining the technocultural structure of the future. Amazon Noir justifiably makes an issue of this, presented in a dramatic way.

Arie Altena



Übermorgen with Alessandro Ludovico and Paolo Cirio, Amazon Noir – The Big Book Crime (2006)