

# AN EMBODIED BODY OF WORK

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## **A**bstract

As technology and science continue to break down phenomena previously held to be whole, artists are presented with new methods and concepts with which to work. Life and intelligence, two areas currently under the scientific gaze, are of particular interest to the author. After giving a survey of his work, the author responds to criticism of the attempt to create intelligent entities.

### Creating Entities

For the last four years I have been creating works of art which are aesthetic experiments in autonomy. These experiments investigate, or attempt to redefine, boundaries of humanity, nature, and technology.

The actual things I build, which I call either autonomous entities or familiars, generally have some sort of behavior within a particular context. It is in this relationship of behavior to context where I situate my art. In order to work in the medium of autonomous entities, I've been following and applying current research in such areas as artificial life, genetic algorithms, and neural networks.

I'm learning and using these tools not because I'm fascinated with these topics and the debates around them — though in fact I admit that I'm far more interested in these debates than, say, most literary or psychoanalytic theory. I'm not creating pieces using these tools because of the tolls' implications for our species, although they will have serious implications. I'm doing it because I think people and animals, autonomous entities I have contact with, are by far the most interesting things in the world. Far more interesting than Venice in three point perspective, than sculpted bodies without *animus*, than the interplay of abstract ideas within culture. As I see it, animals are the most interesting things in the universe, and I'll be lucky if I can create something with the complexity of an animal.

Of course, that's impossible now. I've been gambling, so far, five years of my life that certain developments in scientific research will eventually allow me to build truly complex entities, or, rather, to allow them to emerge from components which I build. Central to this notion are the strategies of Brooks (Steels & Brooks, 1995) and his ideas of emergent behavior and behavior-based robotics.

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## Embodied Works

I have created four autonomous entities to date. The first, I'll just describe quickly. It was initially intended to be a hollow vessel for various tasks, for behaviors. It certainly succeeded in the hollow part. I thought that if I built a general manipulator, I could test many behaviors and metaphorical acts with it. It had many degrees of freedom, half a dozen sensors, half a dozen actuators, and lots, lots lots of inertia.

This robot became so complex, mechanically and in software, that I never really got a chance to give it behaviors; it just posed a lot. I also agree with Simon Penny that this approach, form first and behavior second, is wrong. After I realized that form should follow behavior, I titled the piece after a Kipling verse: **From coupler-flange to spindle guide I see thy hand o god, predestination in the stroke of yon connectin' rod... John Calvin might ha' forged the same.** I can personally attest to the fact that a long name can spice up boring material.

Moving on, I've built three pieces that deal with the issue of technology and social control. They form a series called "Products for a Dystopian Future." I'm using these imaginary devices in the same way that Ridley Scott used *Blade Runner* or George Orwell used *1984*; as editorial extensions of current cultural trends.

The first in this series, **hunter hunter**, explores an issue of consciousness and morality. In moral systems where even thinking about a sin is actually sinful (as in many religions), true virtue lies in orthopraxy: Consideration and thought are really potentials for evil. **hunter hunter**, a virtuous autonomous entity, has a simple binary moral code which punishes aggression with aggression. Using a sensor-servo loop, it can triangulate precisely on the location of a loud noise, process that noise through a simple Adeline neural-network to discern if the noise is a gun shot, and if so, fire a bullet (9mm is the inner-city option), back that exact direction.

**Scopes Beacon** is a site specific installation for placement under the Clarence Darrow memorial bridge on Chicago's South Side. It's a technology for a future where evolution is no longer allowed to be taught. It contains genetic entities, strings of ASCII data, which are competing for survival in an environment that selects these text bits for their similarity to successive lines from Genesis. So, of forty or so initially random strings, the environment selected two strings with the letters closest to "In the beginning the world was without form and ...." These two strings were genetically spliced, randomly, along their length, with a tiny bit of random change of characters, to create forty new text strings. Of these forty offspring, the two which were closest to the target sentence were selected, bred, etc. The sentence would be spelled within about sixty generations, typically. Then the environment would change to demand "and god did move...." The results of each generation were "printed" to an FM digital radio and an LCD screen, disseminating a proof of the existence of evolution.

The final piece is a work in progress, in an early stage of development. It is a product for an earth with drastically less biodiversity. As species lose both their source of food and their natural predators, unpredictable, complex changes occur within their gene pool and population levels, usually leading to further changes in the environment and even to extinction. What better solution (ahem) than a technology which assures both natural predation and a constant supply of food?

This piece that I'm starting works with a specific ant species living in a barren artificial environment. It alternates between both feeding and nurturing the ants at a rate similar to what would occur in their natural environment, and killing them at the rate their predators would in a natural environment.

It should be clear from these works that it is not the mechanism, the movement, or the pure physical form of these pieces which is important.

What *is* important to these pieces is their situation in a part of culture, their transformation of that part of culture, and the behaviors by which they make that transformation.

## Why bother?

We are autonomous entities. The idea of creating new autonomous entities has been floating around for millennia. The first self-regulating (cybernetic) systems on record, variations on the flush toilet, were created in ancient Greece. The complex automata of the 18th and 19th centuries (simulated ducks, chess playing Turks) expressed a desire to mimic living beings in four dimensions. Observers of these did not doubt that technology could, eventually, simulate living beings; many philosophers viewed (and still do) animals as relatively simple machines. Paralleling these technological investigations were moral ones: The golem and Frankenstein's monster are two popular examples of moral lessons which use artificial entities.

Critics of the notion of creating artificial entities fall into two camps. There are those that doubt it can be done on a practical level, and those that object to the idea of even trying it. The former have their points, and I personally hope they are wrong. The latter are often trying to preserve an organic or an essentialist view of life; again, time will tell.

One novel argument against even trying to create artificial entities comes from Jean Baudrillard, presented in his treatise "Xerox and Infinity" from "The Transparency of Evil." Baudrillard's overall body of work is important enough that it's worth investigating this argument.

Baudrillard attempts to contextualize efforts at creating artificial intelligence. He doesn't pull his punches; the first sentence of "Xerox and Infinity" reads:

*"If men create intelligent machines, or fantasize about them, it is either because they secretly despair of their own*

*intelligence or because they are in danger of succumbing to the weight of a monstrous and useless intelligence which they seek to exorcise by transferring it to machines, where they can play with it and make fun of it."*

Later:

*"If men dream of machines that are unique, that are endowed with genius, it is because they despair of their own uniqueness, or because they prefer to do without it — to enjoy it by proxy, so to speak, thanks to machines."*

It is tempting to initially dismiss these arguments; we are, most of us at ISEA, already converted. And, in fact, Baudrillard works off of many false assumptions: He talks repeatedly about "the great progress that has been made in artificial intelligence." I, for one, would like to know what he's referring to — perhaps he's been reading Minsky. He ignores aspects of emergent behavior or emergent computation when he says that "Even the most intelligent machines can never be more than they are..." But his thesis does raise a new and important question: Are we sure that we are not attempting to create artificial intelligence so as to, in some way, yield the responsibility for our own?

Luckily, we don't have to look far to find good reasons for creating intelligent entities that are not human. Baudrillard tacitly assumes that such an intelligence would be human-like. If, on the other hand, intelligences that were different from human intelligence were invented, we would have the potential to learn from them. In fact, we already do — deceptive dolphins and warring gorillas are two species we've already learned a lot from. There are thousands more on this planet, and potentially a lot more to come.

There's another example of intelligent, autonomous entities which serve humans rather than dehumanize them; monsters, as heard in myth, seen in painting, and sensed under the bed. As has often been said, monsters are cultural tools for mapping the boundary between what a culture thinks is human and what is not. Monsters de-monstrate. Ambroise Paré built a taxonomy roughly divided between monsters and prodigies. Isidore of Seville defined monsters in two categories, *monere* and *monare*, monstrations or warnings of divine will. It was not until the modern era that historians of religion were able to ask the more semantically fundamental questions "Of what were monsters monstrations? and whom were they intended to warn?" (White, 1991)

A culture's monsters are a test of what that culture hopes to differentiate itself from. As Donna Haraway points out, "The Centaurs and Amazons of ancient Greece established the limits of the centered polis of the Greek male by their disruption of marriage and boundary pollutions of the warrior with animality and woman." (Haraway, 1991) I doubt that angels, God, centaurs, rakshasas, and bodhisattvas dehumanize us; In fact, it is within the cracks of all these artificial, if fictional, intelligent entities that many definitions of our species may be found.

Baudrillard, who perceives AI research as an abdication of personal responsibility to one's own intelligence, ignores the many useful and poetic functions artificial intelligences might fulfill. The questions of language and meaning semioticians wrestle with may be impossible to solve because we have only one data set, one history. Artificial life, too, can be used to illuminate some of the central questions of the human experience. Questions from biology like the origins of life, or the mechanism of autopoiesis, may well be impossible to piece together from the fossil record. Surely a definition of life, language, or intelligence can be more easily generalized from multiple examples?

Baudrillard says that "All kinds of spare parts are available to help humans achieve gratification, but none has yet been devised that could take pleasure in their stead." Why would an autonomous intelligence take pleasure in our stead? Is this like immigrants taking jobs? Does he think there is a limited amount of pleasure in the universe? Is he somehow jealous of the possibility that something else could achieve pleasure?

In fact, Baudrillard's argument, when zoomed out a little, is swept away by what Daniel Dennet calls Darwin's "universal acid". To imagine that humans are the end of evolution is just plain uninformed. It is likely that within a century or two, intelligences will be created by human endeavor. I, for both moral and aesthetic reasons, want to ensure that these intelligences are not in the nose cone of a smart missile, or used to maximize profit for a few corporations. Baudrillard thinks it's silly to attempt to add to the net amount of intelligence on the planet. I think that intelligence, diverse intelligence, is something we could all use more of.

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