

## TWO MYTHS

by Fred Truck

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In 1912, Marcel Duchamp began a series of notes for a work of art that he began in 1915. The notes were eventually collected in a box, now known as The Green Box. The work of art he made, which he described variously as "an agricultural machine" or a "bachelor machine," and executed in terms of mechanical drafting, was *The Bride Stripped Bare By Her Bachelors, Even*. One of his purposes in making this revolutionary work was to put art at the service of the mind. Thus, with one stroke Duchamp opened two very fertile streams in 20th century art: conceptual art and machine art.

Conceptual art is today still a very vibrant tradition in both American and European art. It has furthered the tendency, expressed and developed in other "isms" of twentieth century art, to break down the barriers between high art and whatever else exists in contemporary life. For example, conceptual art's acceptance and use of mathematics has made for some very interesting geometrical art, not to mention the *Number Poems* of Richard Kostelanetz.

On the other hand, machine art has had its ups and downs, due largely to our changing views of machines over the course of the century. Until World War II and the atomic bomb, most people viewed the machine as the hope of the future. After Hiroshima, this view darkened...but not completely. Perhaps the most recent high machine art has experienced occurred in 1960 with Jean Tinguely's *Homage to New York*, although there have been successful practitioners of machine art since then, most notably Alice Aycock. Even so, Tinguely's work is often satiric and critical towards the machine. The purpose of *Homage to New York* was for the machine to destroy itself.

It is my opinion that the relationship of art and machines is about to undergo a massive change,

because of the availability of affordable microcomputers to artists. Since writing software allows the programmer to construct a machine by giving the computer specific instructions to follow, machine art will join the currents of conceptual art because artists will be able to build conceptual art machines by programming and writing their own software. At the present, the most fertile area of computer science for artists to explore is Artificial Intelligence. Under its aegis, researchers are working with expert systems (which advise doctors on difficult medical diagnoses, or tackle difficult problems such as prospecting for oil, for example), robotics systems used in space, defense, and factory automation, and natural language systems, which allow users to communicate in English, or some other natural human language, with a machine.

Artificial Intelligence is also one of the most controversial areas of computer science. There are those who feel that while machines can shuffle symbols, they have no understanding. They point to the fact that while expert systems can often perform better than human doctors in the diagnosis and treatment of bacterial infections, these expert systems don't know what a bacterium is, don't know the difference between health and sickness, and don't even know what a doctor or a patient is. These people, many of whom are respected computer scientists, see themselves as humanists and defenders of traditional Western cultural values, including not only science, but the arts and humanities. They say a computer will never produce a work of art. Only a total mind can do that. They profess faith in gestalt, and point to intuition as a uniquely human factor in intelligence, not to mention complex feelings, that computers will never be able to emulate.

On the other side of the dispute are the Artificial Intelligence researchers. They represent the Determinist position in the AI dispute. They are slowly piecing together a model of how they believe the mind can be represented. In opposition to the humanists' insistence on a gestalt, or

holistic point of view, the AI community points to demonstrable successes with expert systems in various fields of human endeavor.

Expert Systems are much in the news these days. These programs work by complex systems of heuristics, or conditional rules. Such a rule, written in English, might be written as:

IF I feel hunger, THEN I will eat.

What is important about such IF/THEN constructs is that they are not hard and fast. The above rule, for instance, doesn't say what should be done IF I feel sick, or IF I feel happy. When many of these rules are connected, skillful programmers can build systems capable of subtle and sensitive reasoning power. Furthermore, once something is in memory, they never forget nor do they tire, as human experts do.

Additionally, the AI community has made some interesting and important discoveries in relationship to human expertise and human activities we all take for granted, such as seeing or walking. Essentially, even though it is laborious, it is much easier to program a computer to diagnose various types of meningitis, than it is to program it to "see" and differentiate randomly piled machine parts. This is because the various levels of management involved in medical diagnosis are not as great in number as are the management levels involved in visually sorting out gears, shafts, toolbits, metal shavings, and drills. For this reason, because art is an area of human expertise involved in managing certain highly specialized talents and information, and because drawing and shading can be programmed, so the computer doesn't need to rely on vision, it is actually be easier to program a computer to make a work of art than to program a robot to perform four or five different tasks in an auto assembly plant.

There are two Greek myths that illustrate differing points of view of the artist and the

artist's awareness of creative action, that parallel the humanist and determinist positions. An interesting point of similarity between these stories is that both concern the animation of statues--today, we would say building robots. The first, the familiar myth of Pygmalion develops a thoroughly humanistic point of view. As told by the New Larousse Encyclopedia of Mythology, 1972, on page 131, the story runs this way:

"In this same island of Cyprus, in Amathus, there lived a sculptor named Pygmalion. Passionately devoted to his art, Pygmalion was only happy in the silent world of statues which his chisel had created. His misanthropy was attributed to the disgust he felt at the conduct of the Propoetides. These were girls in Amathus who rashly denied the divinity of Aphrodite. To punish them Aphrodite inspired in them such immodesty that, losing all sense of shame, they would prostitute themselves to all comers. In the end they were turned into rocks. Thus Pygmalion shunned the society of women, but nonetheless fervently venerated Aphrodite. Now it came about that he made an ivory statue of a woman of such extraordinary beauty that he fell in love with it. Alas! the cold image did not respond to his transports of love. Aphrodite took pity on this singular lover. One day while pressing the inert statue in his arms Pygmalion felt the ivory suddenly moving; his kisses were returned. The statue was miraculously alive."

This is ostensibly a tale of the transforming power of love, but there are some troubling subtleties present. For example, in this version, it is not the love of the artist for his work that animates the statue, but the power of the goddess of love. Perhaps this difficulty disappears if one assumes that Aphrodite's power is an emotional projection of Pygmalion. But even so, the projection doesn't seem to be under his control. Aphrodite is clearly shown to be an active and independent force. As a result, it is unlikely that Pygmalion would be capable of repeating his remarkable feat. And in fact, there is no record

that the sculptor, having made one robot, then set about populating the island of Cyprus with more automatons.

This is not the case with Hephaestus, known primarily as the blacksmith of the Olympian gods. In a mythology filled with gods known for their physical beauty and perfection, Hephaestus, though powerful in upper-body strength, was lame in both legs. "In order to steady his unsure footsteps--for his frail legs supported his massive body with difficulty--he had even fashioned two golden statues which resembled living girls. They had been endowed with movement and hastened to his side to aid him as he walked." (New Larousse Encyclopedia of Mythology, 1972, p. 127).

Here is clearly someone who knows what he has done, why and how he has done it, and can do it again. In proof of this, mythology credits Hephaestus with the following robots, or robot-like devices: the gold and silver dogs of Alcinous' palace, the gold-wheeled tripods which rolled of their own accord into the assembly of the gods, and the giant Talos, a man of bronze, who guarded the Cretan tree.

These two myths, though of ancient origin, provide several insights into arguments that are currently raging concerning the nature of cognition--both human and machine. The myth of Pygmalion, as mentioned earlier, describes the humanist conception of cognition. The mind and feelings are only knowable to a certain, limited extent, because of their extraordinary complexity. The leaps of insight and perception made by genius are proof of the holistic nature of human thought. No machine can be made to think like a person, or even think at all. Only the goddess of love can transform Pygmalion's statue to life.

The myth of Hephaestus and his robots, on the other hand, expresses the deterministic or Artificial Intelligence point of view of cognition. It is important to note that in the Hephaestus myth, little or no concern is given to

the nature of human thought per se, whereas a great deal of concern is given to machines that respond to particular situations of their own volition. This endows some of the robots with behavior that people would interpret as intelligent--for example, as when Hephaestus' golden girls aid him in walking. These animated statues presumably know the difference between the smith's desire to walk, and his desire to lie down for a nap, or to sit down to eat lunch. Otherwise, they would be an incredible nuisance to the artisan of the gods, taking him for a walk every time he turned around for his bellows or hammer.

This brings to the fore an extremely important point about the nature of artificial intelligence, about expert systems, and about the use of computers generally. That is that, at this time, the expert systems we are capable of making are best viewed as intelligent assistants. They are not a replacement for people, either ourselves or others, nor are these programs a replacement for human activity, such as art making. At this time, it cannot be resolved whether computers can think or not, or, if they do, whether they think in ways that are equivalent to human beings. But, it is possible to program a computer in such a way that the behavior it exhibits will be interpreted as intelligent by most people. It is also possible to structure a program in modules that represent specific steps in human thoughts necessary to achieve a given action, though some instructions in a particular module may be done solely to benefit the machine and satisfy its requirements. But can a computer think? This question, like the question of how many angels will fit on the head of a pin, is not worth attempting to answer as it becomes an article of faith (either computers think or they don't) with no middle ground possible, and an issue the rational mind intent on accomplishment sees beyond.

In conclusion, to persist in the humanist tradition will ensure that the past will be the future and that art will remain without the potential the future of Artificial Intelligence

promises. In microcomputers and programming, there is the possibility of a new and accessible art, effecting a broad change in cultural perspective. The seeds of such a change are present now, in the working models of intelligent behavior AI researchers are developing. For all its limitations and faults, and there are many, it is better to have a working model of intelligent behavior than to rely on the misunderstandings and commonplaces of the past, which cannot be demonstrated, except as an article of faith. It is time for artists to demystify art and the process of art making. It is time for artists to contribute to the knowledge base. Welcome the age of the electronic conceptual machine!