

OPINION ART & SCIENCE

IN 1998 artist Natalie Jeremijenko cloned a walnut tree 1000 times to observe how strictly genetics determines destiny. After exhibiting the plantlets at San Francisco's Yerba Buena Center for the Arts, she raised them until they were mature enough to grow outdoors, and then transferred 40 to sidewalk plots. It didn't take long for nurture to overwhelm nature, and for the trees to look less and less alike despite their identical DNA.

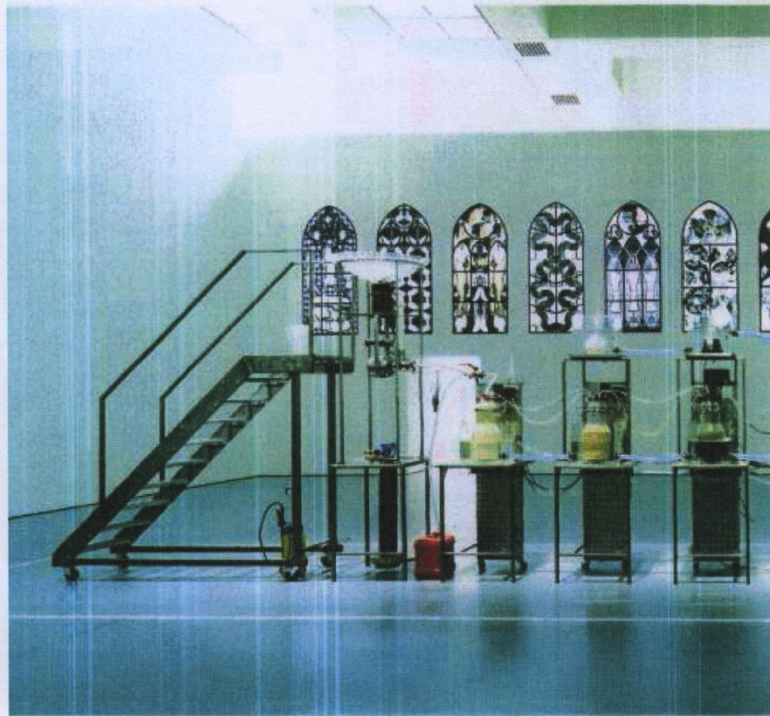
Jeremijenko's *OneTrees* has been deemed a classic example of sci-art, an emerging artistic genre typified by the application of scientific techniques, often in collaboration with lab-based researchers.

OneTrees remains a sci-art benchmark to this day, I believe, though not because the work was a scientific breakthrough. While any geneticist could have predicted the general outcome, the cloned trees have become, in the specific shapes of their branches, unforeseeably complex portraits of their respective environments. *OneTrees* succeeds because the trees outgrew the nature/nurture debate motivating the work. Scientific methodology blossomed, rather unscientifically, into artistic expression.

Just how difficult this is to achieve can be seen by looking at the sci-art genre's many failures. Some of the more egregious examples, in my view, are from Eduardo Kac, often considered the pre-eminent practitioner of sci-art, and among the few to have their work enshrined in museum collections.

One of his most famous works, *Genesis*, encodes a line from the Bible as a synthetic gene in a living micro-organism, and allows people to mutate the bacterium by switching on an ultraviolet light. Originally the sentence read, "Let man have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moves upon the earth," an assertion that has been progressively distorted by the UV radiation. "The ability to change the sentence is a symbolic gesture," Kac argues on his website. "It means that we do not accept its meaning in the form we inherited it [as a revered biblical text], and that new meanings emerge as we seek to change it." Beyond being pedantic, this symbolism is missing from the piece itself; Kac's set-up merely confirms the biblical phrase, literally giving people dominion over the bacteria by letting them garble its "wordy" DNA.

Kac represents an extreme of sci-art, infatuated with the aesthetics of technology to the detriment of artistic substance. Another extreme is as commonplace and equally infelicitous: work that is driven by politics.



The excremental nature of being

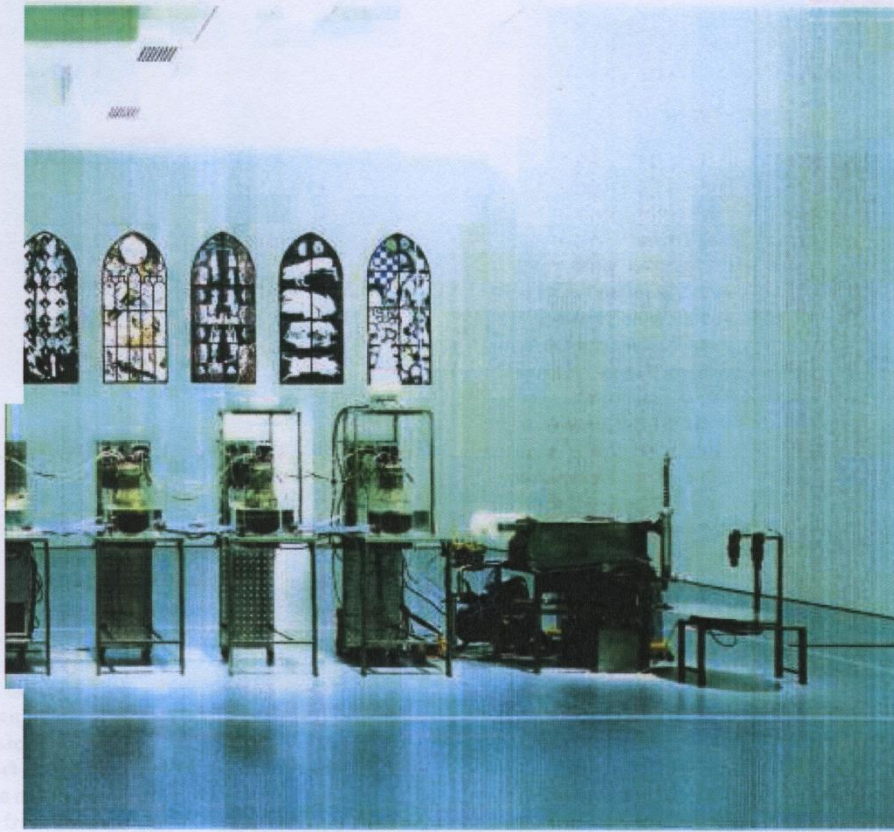
Collaborations between art and science are today's metaphysics. The good ones help us understand science at a deeper level, argues artist and critic **Jonathon Keats**

The group Critical Art Ensemble (CAE), for instance, has staged actions to protest against the spread of genetically modified crops by setting up portable laboratories where people can bring in apparently natural grains and vegetables for GM testing. By showing that many of these foods were contaminated, CAE has effectively demonstrated that crosswinds know no political bounds, and that the use of genetically modified organisms by anyone

ultimately effects everyone. CAE is to be lauded for enlisting the public to publicise the fact that genetic engineering is an inherently global issue, but its strong argument is muddled by framing this scientific and political activity as art.

Good scientists demystify the world in which we live, whereas good artists engage the sciences meaningfully by means of remystification. Just as Jeremijenko's trees

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Food in, something very different out. Take a moment to digest *Cloaca* by Wim Delvoye

grew from genetically programmed plantlets into marvellously unpredictable profusions of branch and leaf, sci-art applies the rational apparatus of science to reacquaint us with the overwhelming strangeness of nature. Sci-art should complement science as a sort of contemporary metaphysics.

This metaphysical work can be achieved using all manner of media, and need not have any formal relationship to traditional modes of artistic expression such as painting and sculpture. Indeed, other approaches may be more opportune. In the 18th century, for instance, metaphysical conundrums were sometimes contemplated through the construction of philosophical toys: mechanical automata that provoked questions about what it meant to be alive. One example was a mechanical duck that, through a set of hidden compartments, produced the illusion of digesting corn.

Several years ago, in collaboration with scientists at the University of Antwerp in Belgium, the artist Wim Delvoye succeeded

in replicating the digestive process for real, achieving the work of the human stomach and intestines with a roomful of computer-controlled vats. Probably the most provocative work of sci-art to date, *Cloaca* (pictured) has been exhibited by a variety of institutions and drawn crowds to see the daily feeding of meals prepared by local restaurants – and especially to witness the discharge of excrement precisely 27 hours later.

But what are we to make of such bodily functions performed with assembly-line efficiency? Are we, too, merely excrement factories? Is this the purpose of life? Surely these are not scientifically meaningful questions. Presumably they have no answers.

The art, persistently beguiling, is in the asking. ■

PROFILE

Jonathon Keats is a writer and artist whose projects often involve the sciences. In recent years he has screened pornography for plants, choreographed ballet for honeybees, exhibited extraterrestrial abstract paintings and, he claims, attempted to genetically engineer God