

J. MCCORMACK



Jon McCormack's *Morphogenesis Series* explores a computerized evolution of native Australian plants.

Q&A Jon McCormack

Species futurologist

Media artist Jon McCormack uses computer algorithms to imagine the future of native Australian species. As he prepares two new works — *Codeform* and *Fifty Sisters* — for the Ars Electronica Festival in Linz, Austria, he talks about digital evolution and virtual ecosystems.

N. HIGGINS

Tell me about your work.

I use evolutionary algorithms to create artificial life forms that would be almost impossible to design directly. I employ a process similar to selective breeding that evolves aesthetic and behavioural traits. The computer is able to find nuances and complexity that I could never imagine. It is a creative partner, a way to make the unimaginable tangible. I've been told that visiting my installations feels like taking a walk in a strange forest.

What influence has existing Australian wildlife had on what you do?

Growing up there, I was exposed to flora and fauna that left an indelible mark on my view of nature. On one school trip to the bush, we spent several days looking at everything we could find in a square metre of wild forest. It was amazing to see the variety of organisms in such a tiny space. Students just a hundred metres apart found entirely different species.

How do your algorithms imagine the future of native species?

I've been inspired by Hungarian biologist Aristid Lindenmayer, who in the 1960s devised a formal mathematical system to

model the growth of plants and simple multicellular organisms. A book he co-authored, *The Algorithmic Beauty of Plants* [Springer, 1990], showed how simple replacement rules could give rise to complex forms. I used this idea as a basis to make early animations of imaginary plants. In 2006, I produced work for a large digital billboard on a freeway in Queensland. I made a series of still pictures of imaginary hybrids of plants that were once native to the region, but had been removed to make way for the road. At first people thought I was an incredible painter. They were disappointed to discover that these strange combinations were 'grown' in a computer. But I couldn't have imagined those plants on my own.



Can your imaginary organisms interact?

Codeform presents a virtual, interactive ecosystem. Your museum ticket will be scanned, and its bar code will produce the genetic material for a digital creature. In a warehouse-sized room with eight high-definition

stereoscopic projectors, you will see your creature moving and breeding with others. The piece plays with the idea of DNA as a code for life that you are given and cannot change. I hope the scale and strangeness of the surroundings will expand peoples' imagination about real and artificial life.

What inspired your *Fifty Sisters* project?

I've used oil company logos as the basis for a set of 50 exotic-looking artificial plants depicted on large digital prints. The BP logo is floral, a clean veneer hiding something deep. There's no denying the benefits of oil. Cheap and abundant energy is one reason we live in relative safety and comfort. But we need to appreciate that our reliance on fossil fuels has many costs. Oil was once phytoplankton and other prehistoric flora, and has taken hundreds of millions of years to produce. Ironically, the burning of fossil fuels is returning our climate to conditions similar to those that were prevalent when these plants evolved.

How are computers changing the way we think about art?

Computers still leave most of the real creativity to the programmer. We're on the cusp of a very different relationship, however, where the computer won't be a passive tool but will contribute to the creative process. Current devices have yet to take advantage of that potential. A digital camera uses sophisticated algorithms to optimize the shot, sometimes even waiting for the subject to smile before opening the shutter. This puts the user in a very passive role. The mass reduction of creativity to the lowest common denominator is dangerous. Machines should allow for accidents and serendipity, contributing their intelligence without telling us what to do.

Could a computer be creative on its own?

When Charles Babbage built his Analytical Engine, a precursor to the computer, his muse and collaborator Ada Lovelace wrote that it "can do whatever we know how to order it to perform" but "has no pretensions whatever to originate anything". That criticism has endured. But we now have machines that have beaten the world's best chess players and proved theorems that humans couldn't. We haven't built creative machines yet; I suspect we will eventually. A program written by composer David Cope has generated symphonies that sound like Mozart and Rachmaninoff to informed listeners. Visual artist Harold Cohen has spent decades developing a software 'artist' that generates figurative drawings. There is debate about how creative these programs really are, but I think they challenge the assumed superiority of human creativity. As computers continue to develop, our understanding of creativity will change.

JASCHA HOFFMAN