Rebecca Allen on Kraftwerk, Video Games and Artificial Life

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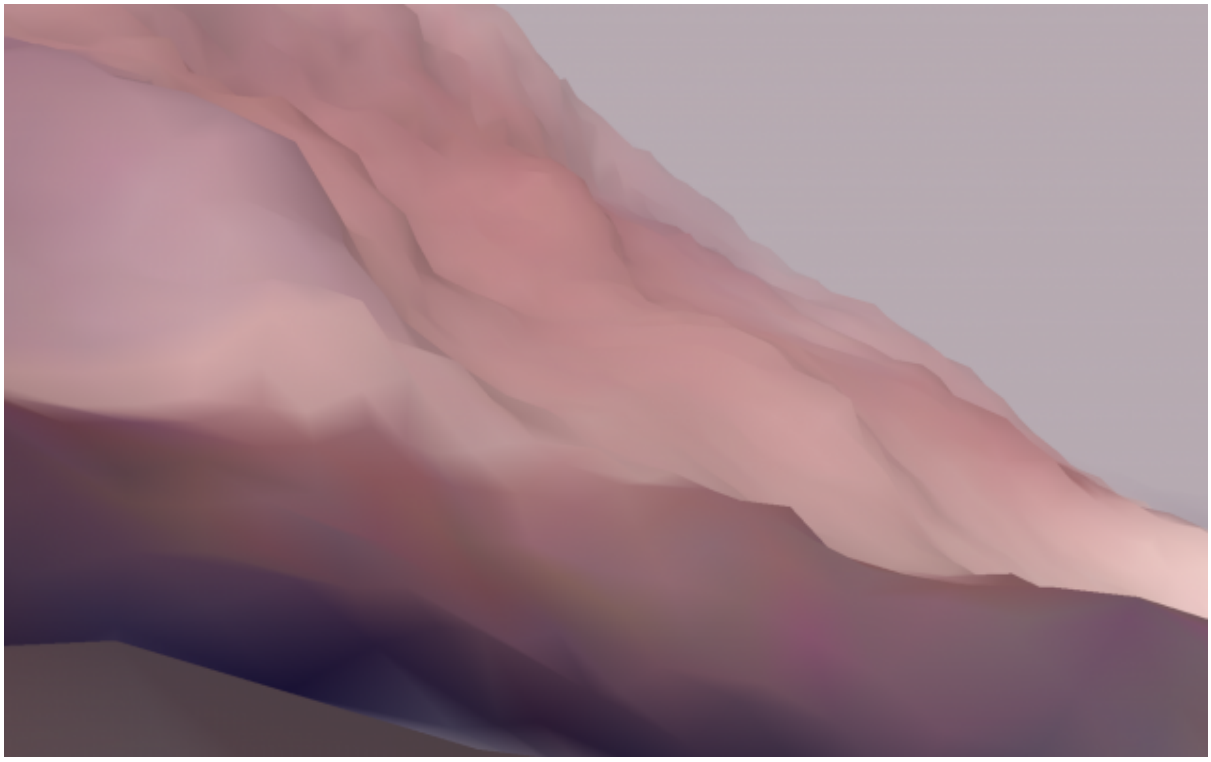
“Artists are inventors too; coming up with new ideas and new forms of expression, so to be in a research lab and to be an artist inventing new things made a lot of sense to me.”

Rebecca Allen is an artist inspired by the aesthetics of motion, the study of human perception and behaviour, and the potential of advanced technologies. Throughout her career, now spanning nearly four decades, Rebecca has moved fluidly between artist studio and research lab, using technological research to inform her art. Her artwork has taken the form of virtual and augmented reality art installations, experimental video and large-scale performances, bringing together the worlds of fine art, performing arts, pop culture and technology research.

Her early interest in utilising the computer as an artistic tool led to her pioneering art involving human motion simulation, artificial life algorithms and other generativetechniques for art creation. Rebecca has collaborated with artists such as Kraftwerk, Mark Mothersbough (Devo), John Paul Jones (Led Zeppelin), Peter Gabriel, Carter Burwell, Twyla Tharp, Joffrey Ballet, La Fura dels Baus and Nam June Paik.

Here, **Kay Watson**, Arts Technologies Curator at the Serpentine, speaks to pioneering digital artist and researcher **Rebecca Allen** about her wide-ranging career, the intersection of art and research and the need for a new kind of inventor.

This conversation is one of a series of discussions that have emerged following the release of the Serpentine R&D Platform’s *Future Art Ecosystems: Art x Advanced Technologies* report. Through these exchanges with artists working in the context of advanced technologies, we aim to make visible the often invisible infrastructures and systems behind this kind of work.



The Observer (1999-2019). Courtesy of Rebecca Allen.

Kay Watson: Your work interrogates what it means to be human in relation to technologies through an examination of the body in motion, perception, interaction and consciousness. Could you tell us how your work has developed?

Rebecca Allen: As an art student in the early 1970s at Rhode Island School of Design (RISD), I was inspired by the early 20th century art movements such as the Bauhaus, Constructivism, Futurism and Dada. They were looking at the technologies of their time — the industrial age — and using new tools to make new forms of art but also thinking about how these machines were affecting society. It's at this point that I decided that computers and the electronic age were going to be the new 'industrial age' and that as an artist I should focus on similar ideas. Also with my focus on motion-based art and human movement, I thought the computer could be a good artistic tool for this type of work.

To my good fortune, next to RISD was Brown University where they were doing some very early work in computer animation and I went there to do an independent study but RISD said: 'no, don't work with computers', but I did it anyway. It was then that I realised that the traditional art world was not thinking this way. They loved the Modernists and their ideas but somehow they couldn't love anyone working with computers. It's amazing that 40-50 years later, the art world is still just discovering computers and technologies.

The Tangle of Mind and Matter (2017). Courtesy of Rebecca Allen.

KW: In *Future Art Ecosystems*, we are examining the contemporary landscape of artists working with advanced technologies, and I wanted to acknowledge that artists have been working with and interrogating emerging technologies for decades. You were part of a team at MIT Architecture Machine Group led by Nicholas Negroponte working on the *Aspen Movie Map* (1978-80) — a mapping system and visual interface for travelling through Aspen, Colorado, and a critical precursor to Google Street View, which was responsible for numerous technical innovations. How as an artist did you become involved in this type of R&D work?

RA: I've always felt like my biggest role has been as a performer because of the way I've infiltrated computer labs. Very often I've been the only woman and the only artist, but to work legitimately in these areas meant that I had to learn *a lot* about the technology. *Aspen Movie Map* was a project I became involved with when I was admitted to the Architecture Machine Group's new graduate programme at MIT. Like almost all research of that time, it was funded by the US Defence Department (ARPA) who were investigating new ways to think about maps beyond 2D graphics. So we experimented with touchscreens, joysticks, 3D graphics and videos to create an interface that was just like what Google Street View is now.

In the Architecture Machine Group, I was working on funded research projects like *Aspen Movie Map* while developing my own thesis work at night. My thesis at MIT was titled *Computer Rotoscoping with the Aid of Colour Recognition*, in which I developed a really innovative way to create unique forms of rotoscoped animation using machine vision, working with a brilliant undergraduate programmer, that drew on my experience of experimental animation. I was fortunate to be at MIT at this time, as Negroponte was a rare person in this context because he understood the benefits of having artists, and not just scientists and engineers, in his group.

Aspen Movie Map (1978) Courtesy of Rebecca Allen

KW: I'm interested in how you have continued to seek out contexts for accessing early stage tech research, whether in universities, tech and video games companies or research labs, as well as experimenting with different modes of distribution such as music videos. Could you tell us more about how your art found its way into such unique contexts?

RA: When I left MIT, there were almost no places for the kind of work that I wanted to do but, fortunately, I ended up at the Computer Graphics Lab at the New York Institute of Technology which was the premier place for computer graphics and animation software development at that time. I had to work at a lab, because there were no commercial software programmes, no personal computers, and costs for computers and computer graphics were astronomical. This lab was well equipped with state of the art equipment and our mission was to invent, design and build the graphic and animation software systems that we use today. It was so exciting to be there at this time. To be part of the invention of new artistic tools. To ponder how light reflects off virtual surfaces, how to add textures and shadows and figuring out how to animate models in three-dimensions. I was there for six and a half years and it was a really exciting, creative time for invention. Artists are inventors too; coming up with new ideas and new forms of expression, so to be in a research lab and to be an artist inventing new things made a lot of sense to me.

My artistic projects there were also a way to test out the new software systems. They provided motivation for the computer scientists to develop working software knowing there was going to be a public presentation of the work. Since I didn't just want this

work to be shown at technical conferences or exist only in research papers, I was looking for different ways to distribute it.

In 1982, I worked with the choreographer Twyla Tharp on *The Catherine Wheel*, a feature length dance film with music by David Byrne, in which a computer generated character plays the role of St. Catherine. It was produced by the BBC and was the first time the public had seen a 3D human model moving on TV and I love that its first TV appearance was in an artwork rather than a commercial, where just about everything else was being done. This model was also the world's first 3D computer model of a woman's body. It was created in 1972 by Ed Catmull but it wasn't until 1981 when I started working with it and we decided to try to get it to move that it started to come alive in some way.[1] When in the early 1980s MTV and music video stations started to appear, I thought this was a perfect venue for me to show short experimental films. In 1983, I created music videos for Island Records that were big hits on MTV: *Adventures in Success* and *SMILE*. As they were very popular, that gave me an outlet to have my work shown not just to a bigger audience, but a non-technical audience, which was exciting.

It was then a dream come true for me to work with Kraftwerk. We started in 1984 and, finally, in 1986, *Musique Non-Stop* came out. They too were pioneers, musical artists trying to create a new digital form of music as I was trying to create a digital form of art.[2] With this video, my artistic goal was to define a digital aesthetic, and my research aim was to get the face to move, to express and to talk. At that time, human motion and facial animation were considered some of the most difficult problems in computer graphics and animation research so we were taking that on.

Rebecca with Kraftwerk model (1984). Courtesy of Rebecca Allen. Photo by Linda Law.

Kraftwerk Portrait (1986). Courtesy of Rebecca Allen.

KW: Another ground-breaking example of an artwork for which you had to develop the software in order to create it is *The Bush Soul*, a project you were working on from 1997-99. For *The Bush Soul* you developed your own game engine and an artificial life software system, *Emergence*, in order to build a simulated world and system that explores interactions, behaviours and presence in a virtual space. This is before the ubiquity of Unreal and Unity game engines in the development of CGI and virtual worlds. Could you tell us more about the *The Bush Soul* project, and what it means to build your own software as an artist in order to realise a creative vision?

RA: Up until the 1990s, I still had to place myself in research environments to get access to equipment and software for my artistic practice. Then in around 1993, the whole video game industry was having to move from 2D to 3D, in particular after the release of *DOOM*.[3] Even though I wasn't a game player, I had always been interested in interface and interaction, and because of my background both at MIT and NYIT in developing unique interfaces, I joined the video game company Virgin Games. My title was 3D Visionary, and I was hired to help develop the thinking around making 3D games for the newly released platforms (Nintendo 64, Sega Saturn, Sony Playstation and others). It was a pretty horrible experience to be a woman working in the games industry in the early 1990s. I had foolishly thought I'd come in and add a new form of art or perspective and not just make first person shooter games, but forget it, so I left after two years.[4]

I was invited back to UCLA to develop an art department with a focus on new technologies.[5] At the same time Intel had asked me to propose ideas to them for funding, and I was interested in the new possibilities of using fractals, particle systems and algorithms in an area of A.I. called artificial life in order to create generative artworks. My interest in motion was expanding beyond human motion to the simulation of natural, physics-based motion and complex group behaviours

applied to various abstract forms. To do this we first had to design and build a type of 3D game engine and then a whole system to create complex artificial life behaviour.

I took on the daunting task with mostly undergraduates from my department and the computer science department to build this beautiful system called *Emergence,* which included a 'behaviour scripting language' as an interface that allowed me to define the personalities and other characteristics of nature-inspired abstract forms. Then I set them to live where they go on to do sometimes unpredictable things, because this is how emergent systems work.

I had previously talked with Virgin Games about artificial life and persistent character behaviours because I had done some earlier work with my friend, Craig Reynolds, one of the inventors of artificial life.[6] It had been too early for them, but now I could do that research while making my own 'art game' the way I wanted to.

I wanted the resulting artwork, *The Bush Soul* series, to be interactive and to keep the body connected to the virtual environment. I used what is called a force feedback joystick that could give you various types of vibrations and movements that would tell you something about this virtual world through your sense of touch. A big theme of the work is energy, and special places or special characters have certain powerful energies, so as you navigate around the world and get to a special energy site, you start to feel it with a joystick. That was my way of building a new kind of interface for interacting in virtual worlds that directly connects to the body through touch. I also followed my interest in working with amazing innovative musicians, so the music was created by Mark Mothersbough from Devo.

The Bush Soul #3 (1999) Courtesy of Rebecca Allen.

KW: In 1994, you said in a roundtable discussion – 'it's mandatory that artists of every discipline get involved and help mould what's happening with new media

technology'. Do you still agree with that? How could art institutions facilitate this type of work?

RA: What is really disturbing is that after all these decades new technology is still predominantly being invented by one type of person, a white male computer scientist or engineer, which is tragic. Diversity is still so desperately needed in the invention of technology that is completely changing humanity. I definitely believe it's important for creative thinkers to be involved at that early stage, but I've also seen a number of instances where it hasn't worked so well. I now realise that it's a certain kind of artist who is interdisciplinary, understands the technology, and knows how to ask the right kinds of questions. I know that a typical tech research lab would have a hard time finding the right kind of artist, so this is where art institutions could definitely help.

NOTES:

[1] Ed Catmull is the founder of Pixar, who created the first feature length computer animated feature film, Toy Story, in 1995.

[2] The work can also be seen as part of a collaboration with Nam June Paik for the piece Fin de Siecle II (1989) which includes animation from Musique Non-Stop and other works by Rebecca.

[3] DOOM was one of the first 3D networked first person shooter games that was first released for PC in 1993.

[4] In her time at Virgin, Rebecca was Creative Director for the 1994 game Demolition Man made for the 3DO, and had been working on a game that brought contemporary artists including Jim Shaw into the creative process but left before it was completed.

[5] Rebecca is Founding Chair of the Department of Design Media Arts at UCLA

[6] In 1986, Craig Reynolds invented Boids, an artificial life system that simulates the flocking behaviour of birds. Rebecca collaborated with Reynolds on the 1987 work BEHAVE with music by Peter Gabriel that examined the role of behaviour in communication. It was the first example of a computer animation recorded to the early Japanese HDTV (High Definition Television) format.