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"What I'm really doing when I work generatively is I'm making seeds. Then I'm planting them, in the case of '77 Million Paintings', in your computer. Then the seed grows into all the different kinds of flowers it can produce."



Brian Eno: Let There Be Light

By Dustin Driver

Brian Eno paints with light. And his paintings, like the medium, shift and dance like free-flowing jazz solos or elaborate ragas. In fact, they have more in common with live music than they do with traditional artwork. "When I started working on visual work again, I actually wanted to make paintings that were more like music", he says. "That meant making visual work that nonetheless changed very slowly". Eno has been sculpting and bending light into living paintings for about 25 years, rigging galleries across the globe with modified televisions, programmed projectors and three-dimensional light sculptures.

But Eno isn't primarily known for his visual art. He's known for shattering musical conventions as the keyboardist and audio alchemist for '70s glam rock legends Roxy Music. He's known for fathering modern ambient music. He's known for producing tracks for David Bowie, Talking Heads and U2.

It's easy to see how Eno's stunning artwork could be overshadowed by his musical accomplishments. Music is easily consumed. You can listen to it almost anywhere. His artwork, which often involves complicated and cumbersome contraptions, simply can't be viewed in your living room.

Until now. Eno has found a way to display his light paintings — about 77 million of them — in your home. The multidisciplinary artist, with the help of a few technical experts, has created a computer program that continually fuses his translucent light paintings to create an ever-evolving artistic display on your computer screen. The piece is accompanied by a randomly assembled ambient track that's never the same twice. The program is capable of creating about 77 million permutations of Eno's visual work and is titled, appropriately, "77 Million Paintings".

Television=Light

TVs are nothing more than complicated light bulbs. Eno first grasped this concept in the late '70s. "When I started playing with video, I suddenly had the

Eno's artwork blossomed in the midst of his musical career. Still, it was nearly impossible to deliver his visual creations to the masses. That all changed around the turn of the 21st century. "I walked past a rather posh house in my area with a great big huge screen on the wall and a dinner party going on", he says. "The screen on the wall was black because nobody's going to watch television when they're having a dinner party. Here we have this wonderful, fantastic opportunity for having something really beautiful going on, but instead there's just a big dead black hole on the wall. That was when I determined that I was somehow going to occupy that piece of territory".

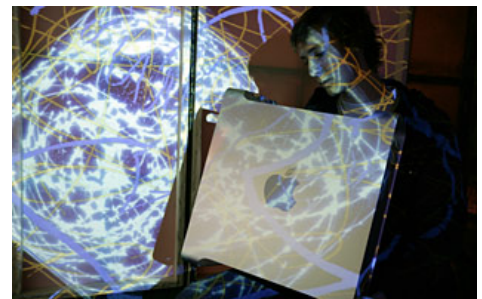
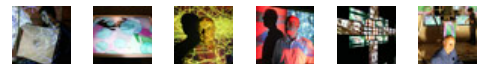
Sowing Seeds

Eno knew that that it would be easy to display his light paintings on a high-definition screen, but he wanted something more. He would create a program that could, on its own, continually generate new artwork for the viewer. The concept is called "generative" and it produces a remarkable amount of artwork. "What I'm really doing when I work generatively is I'm making seeds. Then I'm planting them, in the case of '77 Million Paintings', in your computer", says Eno. "Then the seed grows into all the different kinds of flowers it can produce".

The artist gathered a small group of digital media gardeners to help him cultivate the project. For image processing, he turned to graphic artist Nick Robertson. Dominic Norman Taylor, the head of All Saints Records, came on board to help with production. Programmer and digital video specialist Jake Dowie was hired to compile the program that would ultimately fuse Eno's light paintings into new creations. The team used Macs almost exclusively.

"It's very hard for me to actually think how I would work if I didn't have a Mac", says Eno. "I've been very happy with the way the interface works. My relationship with the computer is what I care about and I think it's easy to have a very smooth and

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Generating Music

Want to get into generative music? Get a set of wind chimes. "About 20 years ago or more I became interested in processes that could produce music which you hadn't specifically designed", says Eno. "The earliest example of that is wind chimes. If you make a set of wind chimes, you define the envelope within which the music can happen, but you don't precisely define the way the music works out over time. It's a way of making music that's not completely deterministic".

realisation that video was really about manipulating light, not manipulating images", he says. "Now it just so happens that because of the history of television — television comes out of cinema, cinema comes out of theatre — we expect that there will always be images, that it's to do with narratives and references to real life".

Eno had something different in mind. He wanted to use TVs to create abstract visual artwork — that is, light paintings. "For the first time it was possible to have a highly controllable light source", he says. "I could specify absolutely exactly what happened to every point on the screen in terms of light. Of course, everyone knows that, but they don't think about it in that sense, they don't think about television as being like a light painting, which is what I wanted to do".

At first, Eno simply turned the idea TV on its head, taking it out of the narrative space and thrusting it into the realm of portraiture. He videotaped the view from his New York apartment and displayed it in galleries. The shows were a smash hit — the serene scenes enthralled gallery goers for hours. Eno went on to create three-dimensional, ziggurat-like light sculptures using old picture tubes and foam core board. He also experimented with slide projectors and slowly changing abstract images.

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More than 300 Eno paintings — most of them scratched or inked onto slides — were digitised for "77 Million Paintings". Robertson painstakingly scanned and retouched every one using Adobe Photoshop and a Mac. "I was taking handcrafted elements and incorporating them into digital environments", he says. "And the transition from the original painting to the digital version is almost seamless". Robertson laboured for more than a year, touching up each image and adding transparent and translucent sections to allow overlap. Once the images were scanned and processed, it was up to Dowie to make them grow within the confines of a computer.

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Artistic Cultivation

A conventional artist cranking out five paintings a day would need about 42,000 years to make 77 million paintings. "If I spent my whole life trying to make all these paintings as separate entities, I wouldn't have gotten through even one ten thousandth of the number that this thing can generate", says Eno. "It's very prolific and economical. For very little input I get a lot of output".



To make it all work, Dowie turned to Macromedia Director. "What Brian really wanted to do was to make sure it was more like a piece of art than a screensaver", says Dowie. "The challenge was taking the images and working out very simple routines to randomly put them on the screen while keeping them in a high-resolution state. And we had to make it as simple as possible so there wasn't a very high load on the processor. It was a lot of trial and error, but eventually we came up with a solution". In its

New Habitats

Until recently it would've been logistically impossible for Eno to show 77 million paintings in a gallery. Now he can. The artist has displayed the project in Tokyo, London, Milan and Venice, and he's scheduled to show it in Capri, Madrid, Palma and Cape Town. Initially, Eno had never planned to take "77 Million Paintings" on tour. The project was, after all, intended for the home. But again, the piece presented unforeseen opportunity and beauty. "For the first time, I saw two or three of these pieces sitting next to each other and it looked lovely to see them in groups. So we started to think about how we could group them. Do we just stick them on the wall like paintings or do we make a kind of meta-statement using a lot of them together?" The answer: both. "We've done shows now with as many as 24 screens visible from one point and they've been very successful", says Eno.

Eno and his team have designed and constructed several configurations for the live shows, including a massive pyramid of monitors enveloped by mirrors. "The floor and sides of the room were mirrored and the pyramid was effectively turned into a diamond", says Robertson. "The project has really got us thinking about monitors and computers as sculptural elements". Each show was (or will be) designed for each space. In Tokyo, the team used 57 Power Macs and iMacs to power the colony of displays. In London, they only used three computers and two monitors. "Every space inspires a different approach", says Robertson. "It won't ever be the same show twice".

Natural Selection

"77 Million Paintings" continues to evolve. "We've been discussing the idea of using natural selection in the next project", says Taylor. "When users see a combination of images they like, they'll be able to hit a button and the computer will remember it. Likewise, the user will be able to kill certain combinations. At the end of a very long period of time, you'll have a handful of images that have survived the selection process. Then the program will

The Nature of Art

"The experience of nature is very important to me", says Eno. "There's the idea that it's ephemeral, that it keeps changing, that you can't recapture it. That produces a different kind of attention. You look at things differently if you know the moment is unique, as opposed to when you know you can revisit it".

Mixing Media

"Fifteen years ago, art and music were created in very different ways", says graphic artist Nick Robertson. "You'd pick up a guitar or you'd pick up a paintbrush. Now everyone's beginning to use the same equipment, and the software interfaces are designed in a very similar way. I use After Effects, but when I watch Brian using Logic, the comparison between the way I work and the way he works in that program is quite startling. If you're a visual artist, you can pick up making music much more quickly now. It has much less to do with virtuosity and technical musical skill and more with compositional skill. It's an extremely exciting direction and I think that in the future, everyone will use the same tool".

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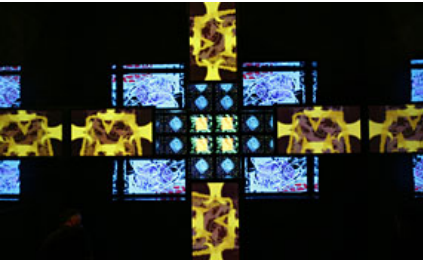
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final iteration, “77 Million Paintings” displays from one to four images on the screen simultaneously. Some of Eno’s paintings are strictly background JPEGs; the rest are translucent PNG files that fade in and out above them.

Eno is pleased with the result, to say the least. “I like the fact that I’m sitting watching this piece now and it’s doing something I’ve never seen before”, he says. “And it does it all day, every day. It’s creating combinations and clusters that are genuinely surprising to me and sometimes breathtakingly beautiful. It’s fantastic”.

“77 Million Paintings” doesn’t just feature visuals. Eno wrote bits and pieces of music for an evolving ambient track. The track is assembled like the paintings — layers of sound interwoven to create a complete piece that rarely repeats itself. Like all of his music, the track was written using Logic Pro. “Logic is inseparable from the way I make music”, says Eno. “One’s work is so much determined by the tools that one has. If you sit down with a piano you will write different music than if you sit down with a guitar or if you sit down with a violin. What you make is so much conditioned by the materials that you’re using to make it. And Logic is a very, very versatile, flexible and strong material. I’m always finding things that I can do in Logic that I didn’t know I could do”.

stop. Everyone’s choices will be different”. Eno could also work with some of his favourite artists to create entirely new sets of images and audio for future project. “They’re all just ideas now”, says Eno. “We’ll see where they end up”.



Eno has spent a great deal of his life sowing creative seeds and “77 Million Paintings” could be considered his most complex and fruitful project. It continues to grow and sprout new ideas, which makes Eno particularly proud. “One of the great breakthroughs of evolution theory is that you can start with simple things and they will grow into complexity”, he says. “This is very unintuitive — it’s one of these things that the human brain isn’t immediately capable of grasping. It doesn’t make sense until you see it. You have the idea that this small thing, which can’t contain that many instructions, produces this hugely complex interwoven, interdependent world. One of the things I like about this piece of work is that they stand as proof of that”.

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