DEPARTMENT: ART ON GRAPHICS

Jon McCormack: Art Infused With [Artificial] Intelligence

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We requested an interview with Jon McCormack after we encountered his work when looking for artists doing compelling work at the intersection of art and artificial intelligence (AI).
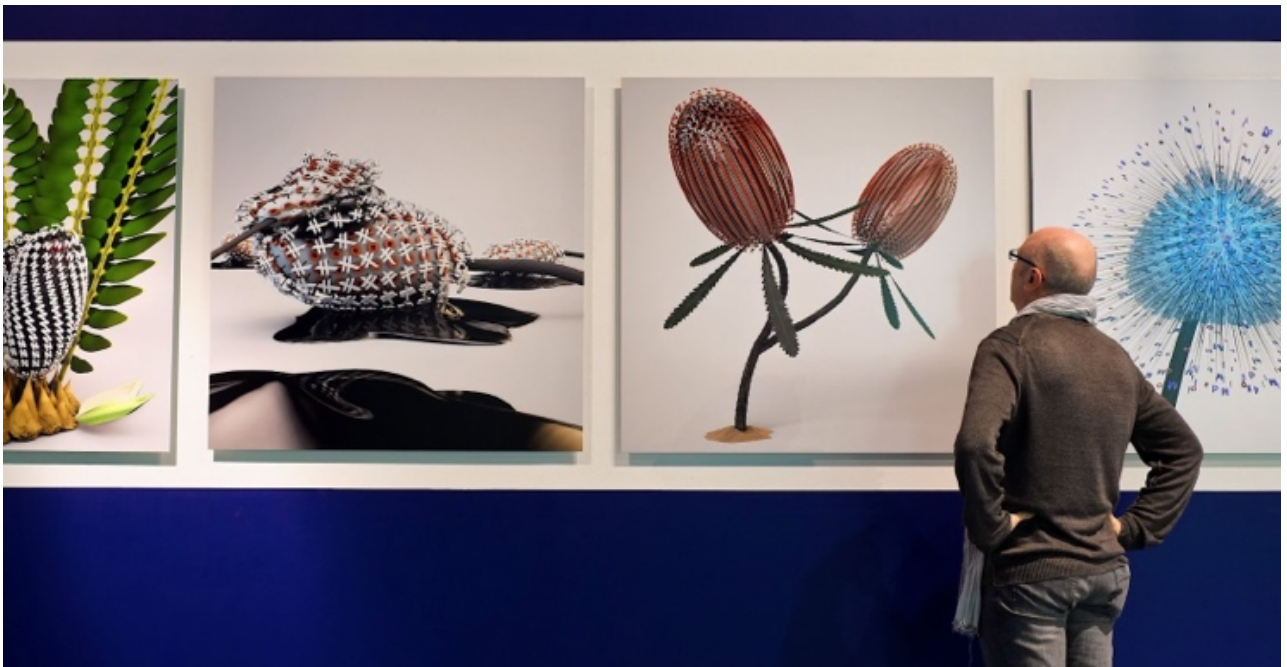

Figure 1 – Jon McCormack, *Fifty Sisters (detail), Ars Electronica Museum, Linz, Austria*.

Francesca: Bruce, along with Aaron and Nick, is guest editing this special issue on art and artificial intelligence. We thought of you Jon, and believe your work would be a good fit (see figure 1). What we usually do is start by talking a little bit about your background and the journey to where you are now.

Jon: How did I get to this lab?

F: Yes, but first, how did your practice develop in such a unique direction? I'm wondering what experiences fostered your work.

J: I started off by studying computer science and maths as an undergraduate. I didn't really "get" applied maths as I sat in lectures. It was interesting at times but I kept wondering what was the purpose of it? So, I took a bit of a left turn and went to film school which was my secret passion.

B: That's a significant turn.

J: To get accepted into the film school, you had to have a portfolio of films that you'd already made. I was making short films and was pleasantly surprised that I got in. They only selected about twenty people a year. It just happened that at the school they got a computer for making animations. That was the new way back then. I thought *I know about computers* and *I can make stuff with them*. Then all the maths I'd learned suddenly made sense!

B: Yes, fortuitous for what then emerged.

J: I started work in computer graphics, and I used to go to SIGGRAPH all the time. I got a job after film school and I made films, but I realized I could not be a director of live action because it was very resource intensive, though I had friends who I helped in making their films. So, I found myself working with computer graphics when it was still very nascent and hard to understand. I worked with a company called Wavefront Technologies who later merged with Alias, and eventually went on to release Maya (now owned by Autodesk). I was working early in the lineage of these animation systems.

B: That's a significant moment in tech history.

J: Yes. I once attended a talk by Bill Reeves, who had just started working at Pixar when he visited. Bill is well known as the person who invented "particle systems" in the early days of computer graphics. I told him I was really interested in generative systems and computers that can make art and that I didn't want to be a traditional animator. I wanted the computer to make something for me. He said, "yes, we can sponsor you." Pixar gave me their software and helped me out at a time when Australia was very isolated from technical developments in graphics. We are talking the early 1990s. There was very little research being done here in computer graphics. It was hard to fund. But when you go to SIGGRAPH there are like five thousand people and you think *wow this is incredible*.

F: This journal curated a 50th SIGGRAPH anniversary special issue that came out in July. In that, many people spoke of the key role that SIGGRAPH played in their lives. Where did you do the generative work?

J: I got a job here at Monash when I told a professor I wanted to use computers to make films and animation. I first went to the art department and they said, "no, computers can't create art." So, I went to see the head of the computer science department and he thought it was a great idea. He offered me a job on the spot. He said, "do you want to work here?" I said, "sure".

B: I remember a similar job offer conversation at that time when computers enabled creative pursuits beyond text and numbers.

J: Then as things progressed here at Monash, I was always interested in generative systems, where the human has limited control, and you are working at the meta level. Over the years that's what my creative practice has been about. Then with the rise of AI, it has been interesting to have PhD students at the lab working in this area. They are less skeptical of AI technologies and willing to embrace it. It's still that idea about co-creation with humans and machines and what can you achieve is greater than the sum of the parts. I am really interested in emergent behaviors and emergent properties. That's what keeps me engaged. You spend hours sitting in front of a machine and then it surprises you by creating something you couldn't have imagined.

F: Interesting. It's very helpful to see your trajectory. If you think of your generative work that incorporates AI, can you explain where AI intersects?
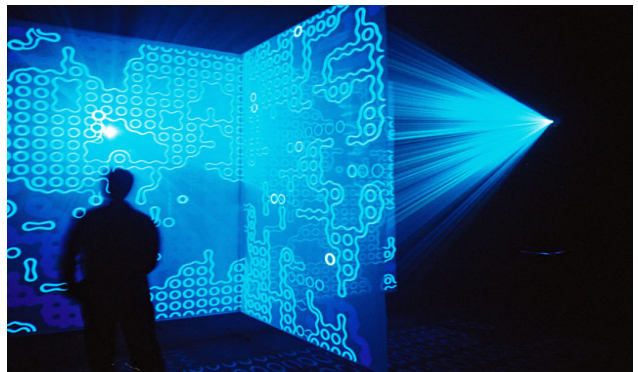

Figure 2 – Jon McCormack, *Eden* interactive evolutionary ecosystem. Australian Centre for the Moving Image 2004.

J: I started SensiLab in 2015 and it was growing in 2017 when AI was getting back on the radar again. But I was always interested in it. Let me show you some work from before the lab existed.

If I start at the beginning, here is an exhibit experience I made in the early 2000s that first used artificial intelligence (see figure 2). *Eden*, which still runs on my laptop now, is like a system of virtual insects, inspired by the time I spent in the remote area of the Northern Territory of Australia. It's largely uninhabited by humans with one of the lowest population densities in Australia. It is incredibly beautiful. I spent time watching and investigating interactions between unique native insect species and the environment.

F: Sounds inspiring.

J: The screens in the exhibit are translucent. There's a fog machine and a machine vision camera looking down from above. On the screens, there are these white circles that are digital creatures that navigate through these delineated areas that are food, and there are also rocks that the creatures have to navigate around. The creatures start off being quite stupid where they walk over food and bump into rocks, but they learn via the learning system. Over time they learn that if you are near food, you should eat it, if there is rock in front of you, then you should avoid it, and if you are stronger than another creature you can potentially battle it, kill it, and eat it.

F: That's clear in the online video you are showing (see jonmccormack.info/project/eden).

J: But they also have a very strong connection to the outside world via sound. It's not a neural network, but an earlier AI technique, known as learning classifier systems. The connection to the world beyond the simulation is by way of the camera that detects people and there's a proxy by which it assesses how interested a person is, based on how long they are looking at the translucent screens. The system notices where people are and it creates food in the area where they are standing. Over time, the digital creatures *learn* that by making sounds they can keep people in a space for a longer period of time. They become symbiotic with the audience. It uses both a machine learning technique and an evolutionary system. Over a long period of time, it evolves and

gets smarter. I wrote academic papers about it. What was most fascinating was the behaviors that emerged. For example, the creatures would hibernate in the winter. When people started appearing regularly, they would get very active again.

B: That work is compelling for its visual look that is crisp and attractive. I like the tile feel to it and yet the curves are elegant in defining boundaries within the digital space.

J: Yes, we used a tiling system where the state of the food changes the visual tile. It provided a nice gridded randomness. There was only so much I could build into the exhibit as it was quite expensive computationally, and yet the behaviors were complex and changing. Some people likened it to being in a forest at night. I exhibited it first in Sydney and then Melbourne. It was the first exhibit where I used artificial intelligence.

B: Where did the exhibit get its sampling for the sounds the digital creatures made? I assume they were emitting sounds you thought would be interesting to humans?

J: It has a bank of about 10,000 short samples, which are divided up according to their frequency spectrum. In their digital sensory system, they can sense different frequencies and they can use specific frequencies to communicate—to warn each other if something is coming, for example. What you hear is a sonification of all the sounds they make, in a spatialized sound presentation. And they produce sounds based on what the learning system is telling them to do. The output is to make a sound, but a very specific sound within the frequency spectrum. Those sounds can change and evolve complex patterns over time.

B: With ample sampling across the whole frequency continuum, is the sound pleasing to human ears?

J: Sound generation was computationally expensive twenty years ago. There was no preplanned combination of sounds but we aimed at having any two sounds combine to provide a pleasing sound, harmonically related. It was hard for them to make sounds that wouldn't work for a human ear.

B: I think that was a magical time, when people were providing experiences with newly competent

graphics systems. You provided one of those experiences that suggested what the medium could provide. If we could have magically put all those experiences from back then in close physical proximity today, it might foster all kinds of innovation with today's available computing components and peripherals.

F: Where did that work lead for you?

J: I shared some work at SIGGRAPH that was derivative of *Eden* in 2012. I had a residency at the Ars Electronica center and the work I created generated images from the equivalent of a digital "DNA" that expresses the visual structures of plants (see figure 3). The plants are produced through a generative grammar, inspired by another biological analogy.

F: How much of the images is created by the iterative generation verses your hands on design? They are stunning pieces with such a wide range of structures.
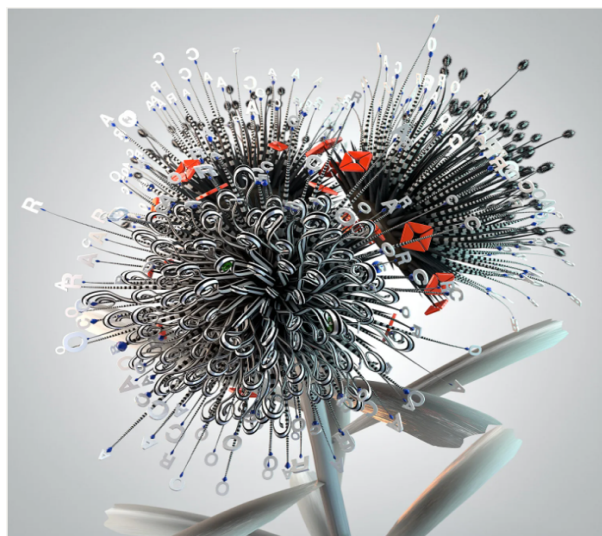

Figure 3 – Jon McCormack, *Fifty Sisters (ARCO)*, series of evolved plant forms based on oil company logos. Commission for the Ars Electronica Museum, Linz, 2012.

J: You spend a lot of time designing. These are meant to resemble plants, but are built from the graphic elements of oil company logos—the idea being that oil came from Mesozoic plants so there is this weird connection between oil and plants.

F: Oh, really.

J: There is a lot that goes into the design. You spend many hours working on what is essentially a very esoteric programming language, but it is very terse. It is very symbolic. You let that run and evolve and see what result comes from it. Then you think *well that's not right*. Let's mate this one with that one. The digital "DNA" ends up being about 500 or 600 bytes long. Rarely more than 1000 bytes.

B: You are playing with a genetic algorithm space here?

J: Yes. In the '90s I met Karl Sims when he came to Australia, and he was famous for working with creative evolutionary systems. Of course, we got to talking and kept in touch over many years while he was working on the stuff he was doing. Back then it was a big thing, or maybe it was going to be something big. I still think it is an interesting idea worth exploring. It's a different kind of AI, using the "intelligence" of genetics and evolution.

B: Did each of your plants share the same genome or did you design them to be different?

J: They are all different, although you can see some of the forms that are crossbred from each other. You get this amazing emergence, for example I didn't design this detail here (see figure 3). You put a genome in and you get a 3-D model out the other end.

F: I want to clarify something. The design of these is spectacular. What I hear you saying is you are presented by many designs, and you pursue the diversity via the code?

J: Yes. It doesn't come instantly. The analogy might be pigeon breeding or dog breeding.

F: You tweak it along the way and eventually get to a satisfying place.

J: Yes. I didn't start out this way.

B: Are you using a Lindenmayer system to get the form from your grammar?

J: Yes.

B: It's a recursive substitution process to create form?

J: Exactly. I took Lindenmayer grammars and developed variants. You can watch them grow. Much of my earliest work focused on growth.

B: You were adding to the grammar, by coming up with new components.

J: Yes, I was adding to it. That was a part of the topic of my PhD. I created an earlier series where I had chemical signaling (see figure 4). You could starve a plant of nutrients. It's the same genome for a plant but it's more of a complete simulation of its possible expression. You are simulating the visual form, not using chemical signals but a digital equivalent.

B: This suggests to me some of the computational biology work I saw from the University of Calgary at the turn of the century. Is that a group you were cross-pollinating ideas with?

Figure 4 – Jon McCormack, *Morphogenesis Series #11/12 (Life/Death)*. Evolved plant form, 2007.

J: Yes. Przemyslaw Prusinkiewicz was the person who worked with Lindenmayer himself and popularized these methods for visual simulation. All these people were at SIGGRAPH which was where the ideas flourished. There was this excitement around the idea you can write something on a single page and it can then generate something with all this rich detail and complexity.

B: And that detail could be so much more today, given all the improvements in hardware, yet I haven't noticed anyone pushing this technique to pursue a quantum leap visually.

J: Perhaps it's been kind of forgotten. For someone like me who has seen the progression from days when you really had to count the number of polygons to limit to what you could deal with before running out of memory, to today where such limits are just kind of ridiculous, there's so much more that can be done now with art and with motion graphics. And you can do it so much easier.

F: But there is something special about this work that is independent of that.

B: Yes, for sure.

J: The thing about Australia is that I was lucky to grow up at a time before climate change was such an issue. Back then you could drive a half hour from here and be in pristine bush. And Australia is an exotic place because it is an island and the flora and fauna has evolved independently, apart from North America or Europe. As a kid we would drive out to the country and see these incredible plants and animals in an endless natural landscape. You develop a deep affinity and understanding of land and environment–something that you don't get from urban living. So, these are expressed from that perspective. That you can get some strangely familiar plant that looks alien, yet natural, I deliberately code that up.

F: That's what's interesting.

J: It's about studying the landscape and then trying to represent that reality differently–in a way that somehow gives you a new insight into what it means.

B: It seems you had a process of taking a plant that you saw, and reengineering it in a process to encode it in a grammar and then you added that to the greater grammar?

J: Yes. Once you understand how the grammars work, you can reengineer the code and then start cross-breeding to generate hybrids. You then look for unusual forms that remind you of something or evoke a particular feeling or emotion.

B: My dream for that is that it is a collaborative play space in which cross-breeding can happen across collaborators. Each collaborator works to represent plants they love in their local environment and then

they all collaboratively design genomes and cross-breed and discuss the forms that come out.

But this space, it seems, attracts people who want to play in their own head. They engage in the process to generate and then get a private joy when a pleasing result comes out that they weren't anticipating. This makes me think about AI and generative art and how people engage with a collection of previous art. When there is a genome, you can discuss a result by opening it up to see the explicit expression of the genome. Today's popular generative AI does not provide such provenance.

J: I think you have a level of control that with generative AI you don't have. It's more removed. I can advance our discussion to more recent work.

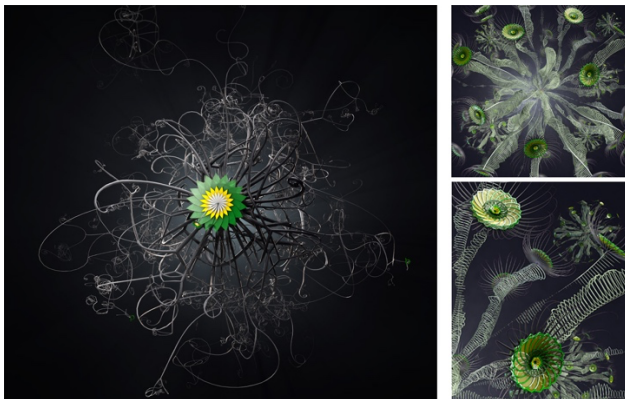F: Before we do that, would you discuss the role of oil industry logos in your work?

Figure 5 – Jon McCormack, *Fifty Sisters (BP)*, series of evolved plant forms based on oil company logos. Commission for the Ars Electronica Museum, Linz, 2012.

J: Sure. The work was inspired by what I saw growing up, but also the recent changes going on. At the time there were many documentaries about the power that fossil fuel companies have, and how they used it to influence politicians regarding the environment. I wanted to make something that referenced that but was still technically matched to the way I worked. When I deconstructed the logos, it became clearer how they were beautifully designed, often referencing flowers or being clean and green (literally!). But fossil fuels are destroying the environment and the idea that the fuels came from

what were originally plants was a motivating connection. It was great fun exploring this space and its complexity, even with a logo constraint. The resulting variety is amazing, especially as they emerged from the evolutionary process.

F: But you bred them.

J: Yes, until I settled on 50 of them to fill a huge wall in the exhibition space. I digitized all the logos and then manually deconstructed them from the bits which I then grouped into basic geometric elements. The plants are constructed from the basic graphical elements of the digital 2-D logos but grow arithmetically in 3-D to create the various parts of the plants. I decide what parts of the logo represent a leaf or a stamen or a stem and so on until there's a full plant represented from all the parts of the logo. But I kept it such that for each plant it can only get its parts from one particular logo. Here's an example from BP and it's obvious it comes from the logo (see figure 5). It just naturally references plants. It was a great project to work on even though it was stressful at the time because I was up against delivering all 50 images by the festival deadline. Doing one or five would have been great, but to do 50 was a huge amount of work. Recently I had a commission for a Sydney hotel, and I spent time re-rendering a plant form from a decade ago – it only took 5 minutes to render at twice the resolution, whereas it used to take several hours.

B: I appreciate you going through your process because I think the more our readers can gain access to your process, the more mind-expanding it is. Yours is such a unique process in how it draws from nature, and it draws from maths, and the steps are compelling.

F: I think what Jon brings is technical, aesthetic, and coding prowess. He comes to the table with genuine experience with plants, and a clear design and artistic ability, and then generates his own code and systems. It is the combination that makes the work sing. Often, generative art contains one, or two, of those elements. It is difficult to master all three. Typically, one work leads to another. Where did this work lead you?

J: This is a good place to talk about the recent increase of interest in AI, with DALL-E 2 and Stable

Diffusion. For a while I disregarded it because I saw what people were doing with it and it didn't interest me at all – it just looked derivative. But as a lab, we work with AI a lot so I thought I'd give it a go to see what it is capable of doing. I had written a few papers that were critical of this technology and I thought *you need to try it out before you write the paper*. I spent months trying to get something unique from this generative AI and I found that I couldn't. At first, I would be typing prompts in and getting things out where I thought it was incredible. I wrote a little essay about it (see https://jonmccormack.info/the-end-of-the-image). Midjourney has a feature where you can type in your prompt and see where other people have typed similar prompts. Every time I got something I thought *this is great — how original*. But then you find other artists who got back almost exactly the same thing. So, with that I got frustrated. Next, I found it also has this feature that describes an image. You give it an image, for example here is a picture I took (see figure 6, left), and you put it in the system and it basically turns it into a prompt. You can then let the AI generate based on that prompt (see figure 6, right). This is what it comes up with.

F: Oh!

J: It's intriguing at first, but then I wonder: *can I change it*? If I could, then I can imagine how these generative AI systems might be useful. Imagine if I had to use my usual process to generate these. It would have taken ages. But I can just type a prompt in and seconds later I get these images out. Amazing. But then you click on them and you realize everyone is making something similar. So, I ask myself *what does this mean, if all that skill gets lost over time as craft?*

F: We all appreciate craft as a career goal.

J: As craft, you spend a so much time thinking about and doing it in an embodied way. It's costly for you to make. You invest time into developing a craft or skill so you can achieve something. Then what if you can use an AI that costs you nothing, and you can get a satisfying result without any skill or time. *What does that mean?*

Figure 6 – Left: Jon McCormack, *Megaforms (Alpha)*. Digital Photograph. 2021. This image was used by Jon to generate text prompts. Right: image generated by Midjourney using the prompt generated from the left image.

B: It's intoxicating the more I investigate the path of algorithmic innovations that got us here.

J: But how can I create things with this system that others cannot create? I started working with this series, and I thought *well these are kind of original* (see figure 7). I don't think of them as artworks, but I just started playing around with an aesthetic that I could get to come up consistently. Everything is stereotypical. If you type *woman*, this is what you get. If you type *mother and child*, this is what you get. They are all middle-class white people. What I actually liked was all the weird stuff – the mistakes – like babies with 3 legs, twisted noses or hands blending into someone else's body.

F: Uh ha. Blended in seamlessly.

J: And I'm sure they are going to fix those anomalies, if they haven't already. The fact that you can keep going and going and get more and more images almost effortlessly. If they were photographs, you could fill a whole exhibit with what a photographer might generate, but it is not a good photographer. I really think they are just vacuous images. They are drawing from a huge amount of imagery that humans have made. I am not a big fan of prompt-to-image as simulating artistic content created by a human hand. Superficially there's something there, but everything seems to look alike after a while.

F: That's been my issue from the start. They all descend into that image type that you were describing a while back. That's the crux of the matter. Your work moves past that. Can you talk about how we as a community can foster the

generation of a wider range of work? Where are you guiding your students?

Figure 7 – Jon McCormack, *The World We Made*, AI generated image using Midjourney, 2023.

J: I think that's part of the danger, because if you look at the sheer number of images being generated, it's astonishing. We're currently undertaking a big data scrapping exercise, and looking at using other AIs to describe the imagery that generative AI is producing. It is one thing to use AI to create an image from a prompt, but it is another to figure out what the AI is describing what an image is of. It might be more objective, and that is really interesting. Recently it was estimated that AI has already created as many images as photographers did in the first 150 years of photography. I don't know how reliable that estimate is, but the source seems credible. We may reach a point where there are more AI generated images than human generated images. I think that is super-problematic because it will normalize synthetic images with real images. Already you are probably looking at something you see online and *asking is that real or is it AI?* Once you say it doesn't matter because it is normalized and it is accepted, that's a bit of an inflection point for human culture.

B: The cultural, societal, and legal ramifications seem significant.

J: Yes. Even now the results are derivative from past human creativity. There's a beauty to them but there is also a sameness to them. If you look at what a really good photographer can do versus what AI can do, there's miles of difference. People do look at other people's work and learn from that, but they don't statistically reproduce the traits that exist, which is what current AI generators do. People come up with something new. In Midjourney there is a bias to a similar look when you ask for something simple without a stylistic description in the prompt, it delivers a very particular kind of image and that image is not very creative. It looks nice, for example the colors are well-balanced and the image is nice and contrasty but they often lack a human narrative or depth, due to this focus on surface aesthetics.

F: Interesting.

J: We did a study by taking a photographer that I like and trying to reproduce the feel of her imagery using AI. Putting the results side by side makes it obvious there is something very different going on and the photographer is real. She was based in Russia just before the war with Ukraine, in a very small village where she was looking at how people live their lives. She photographs real people in a real environment, and there is a whole emotional connection between photographer, subject and audience. You don't know these people but the power of the photography is that you immediately start to form a connection that is beyond the literal imagery. You want to know who is this person and what do they do? It's the little things. There's a teenage girl with no shoes on and she has dirty knees and she's in this old house and it tells a story you cannot tell with AI beyond a statistical amalgamation. You don't have enough control over the image. And even if you did it would not be the same.

B: What if we focus on artificial intelligence being alien? What if we say that is the space where we should be focusing? What if the originality comes from a different form of intelligence? How do you go about pursuing that?

J: That's interesting, but if you look at the current methods, they use statistical models that have to learn from huge samples in data sets. And in those samples, we only have human art. I mean I think we have taken bird sounds and tried to create new bird sounds. But even that is a form of mimicry. I like the idea of forgetting the whole anthropomorphic approach to AI and just say AI is an alien intelligence and we are interested in what that intelligence might be thinking and what it might create. But a problem is that alien intelligence probably has no intention to

create art. We are not any closer to knowing an alien intelligence. We don't have the training data for one to be alien.

B: But do you think these learning models are an attractor right now, and will get so many people interested in the concept of AI that different perspectives will be pursued because this one has paid off so handsomely?

F: I am going to argue that it didn't pay off very handsomely.

B: I am talking about return on investment or how at the end of the day the amount of additional investment the current value chain is driving on AI. The investment suggests where the potential is and the current amount of investment worldwide is enormous. Are you saying this is a bubble?

F: I'll say "fine", if it is AI. But at the moment why aren't we focusing on being able to create human work that would be difficult to create without the computer, but isn't going to be generated by AI alone. Where there is a combination of human and machine that is unique.

J: I think you have touched on all of the issues. They are not new. People have been discussing them for a long time. One is environment. You are a person in the world. Your experience when you live in the world is not just from raw data but it is from the senses and sensibility of the image-maker. It's a sensory experience from a body being in the world: touch, smell, you know, are experiences beyond just being exposed to "images" of things. So, yes embodiment. I think intention is still a big one, but there is a lot of talk from AI companies about how that will change soon. That could be a big inflection point and is the crux of where the anxiety of AI comes from. Not the existential threat that it will take over, but where does intention come from when you give a machine autonomy? Any sparks of autonomous intention don't bode well for human control.

B: There's a lot of work going on to build in safety and control.

J: Yes, but often that safety comes at a human cost. For example, reinforcement learning from human feedback often involves people identifying obscene or distressing imagery so an AI can learn to filter such imagery. If we have people look at the most distressing or obscene imagery to index it or mark it, often those people suffer acute psychological issues from exposure to so much material of this kind, which is why big tech companies outsource this work to developing countries. I mean if you constantly have to look at what is produced by the worst of humanity, that's not surprising. But the result is a system whereby if a generative AI is about to spit out something obscene, this other system intervenes. As a user you don't see it.

F: You painted that picture about that photographer, and I remember when I was in art school, I spent years in drawing class and found it painful. But it is a very satisfying skill.

J: It lends you to seeing.

F: Yes, absolutely, but I have students now who say "why should I learn to do that?"

J: It's the same here.

F: It is a reasonable question, but it's a whole shift of perspective someone brings to the table. And there is a perspective of how easy it is to consume compared to create.

J: Because we are naturally lazy. And there are so many bright new things competing for our attention these days.

F: Right, but we all like stimulus. I get a stimulus from creating images. So, if we get a generation that gets its stimulus from AI images, that's a shift.

J: But it's easy to think you can predict the future, but we don't know.

F: You are right.

J: But these speculations are worth discussing so we can ask "what kind of future do we really want?" Before trends become normalized and they are impossible to undo. I think with generative AI, we are just going to see that now. Look how sophisticated the technology has become in a relative short period of time. Look at Photoshop now with generative AI built-in. That's one of the main tools that a graphic designer or illustrator turns to use.
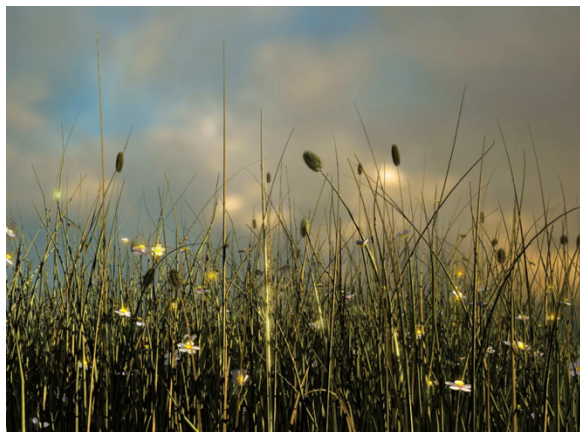
Figure 8 – Jon McCormack, *Morphogenesis Series, #3,* Evolved plant forms, 2011.

Now you can think *why don't I just make a rough sketch and then AI can provide the detail?* I think there is effort in going beyond the homogenization to models you can fine-tune to the particular. So as an artist I can find a generative model that creates images and I can fine-tune it on what I want to do, and maybe there can be some originality if there is enough originality in what you are trying to train it on. There could still be a role for a human to contribute originality that an AI could not master. But we are not there yet.

B: I see you guys accepting the human embodiment by which all this art is looked at and considered. I can understand that because human embodiment came from this incredible evolution within this environment in which we live. I don't find that embodiment as the most interesting place where AI is going to search and find original things. We have to pursue a different embodiment and have a different discussion where we pursue what can come out that is not based on our usual range of human sight or hearing, or through our hand-eye coordination in terms of these wonderful thumbs and fingers that we have.

J: What comes to mind is Alexandria Daisy Ginsburg's work called *Pollinator Pathmaker* (see www.daisyginsberg.com/work/pollinator-

pathmaker). Her art considers the natural world from the embodiment of pollinator species, such as the honeybee. It's not that we use AI to reproduce art as a honeybee would create it, but what if we use AI to help us experience the world as a honeybee would experience it? To pursue what a honeybee considers attractive and potentially emotive when living its life. She refers to it as *inter-species work.*

There's an interesting contrast there as I think about my *Morphogenesis Series* (see figure 8). How different it might look if I had her knowledge of "how a bee, fly, butterfly, moth, wasp, beetle or other pollinator experienced a garden". She has an explicit aim "of transforming how humans see gardens and who we make them for", according to her website.

B: Ah yes, that's a great example to contemplate along the lines of what I'm thinking about with regards to AI.

F: And a good place to end. Thank you.

B: Yes, thank you Jon! I'll be very curious to watch where you head with your work.

About the Authors

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