a conversation with
Scott Benzel

interview

Richard Brautigan

All Watched Over

by Machines of Loving Grace

I like to think
    (and the sooner the better!)
of a cybernetic meadow
where mammals and computers
live together in mutually
programming harmony
like pure water
touching clear sky.

I like to think
        (right now, please!)
of a cybernetic forest
filled with pines and electronics
where deer stroll peacefully
past computers
as if they were flowers
with spinning blossoms,

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<Scott Benzel is an interdisciplinary artist living and working in Los Angeles. Since 2017, he has been employing AI, Machine Learning, and generative algorithmic platforms as part of the composition process. He is also a member of the faculty of the School of Art at California Institute of the Arts. In Fall 2022 semester, I had the chance to take his Pandaemonium Architecture class, which ultimately piqued my interest in social and ethical dialogues surrounding artificial intelligence./>

Date of Interview
March 10, 2023

Interviewee
Scott Benzel(labeled as "SB")

Interviewer
Erin Caihui Chen(labeled as "EC")

EC Can you start by just telling me a little bit about your artistic practice and what you're working on?

SB Currently, I'm working on a show titled "Vestigia"(meaning *"traces"* in latin) at The Horse Dublin gallery. All of my projects begin with research— they're not exactly site-specific or location-specific, but if I am doing a show somewhere like Dublin and there are things I'm interested in about Dublin, I usually try to incorporate that. For this show, I researched W.B. Yeats[1] and his circle, who were mostly members the Order of the Golden Dawn[2], a secret society that he was part of that heavily influenced his poetry. The exhibition will feature sculptures, prints inspired by late 19th-early 20th century artists like Aubrey Beardsley[3] and Moina Bergson Mathers (who also went by "Vestigia"; Yeats dedicated his book "A Vision" "to Vestigia", giving the show its title)[4] and some electronic components,

[1] William Butler Yeats(13 June 1865 – 28 January 1939) was an Irish poet, dramatist, writer, and politician. One of the foremost figures of 20th-century literature, he was a driving force behind the Irish Literary Revival and became a pillar of the Irish literary establishment who helped to found the Abbey Theatre.

[2] The Hermetic Order of the Golden Dawn was a secret society devoted to the study and practice of occult Hermeticism and metaphysics during the late 19th and early 20th centuries. Known as a magical order, the Hermetic Order of the Golden Dawn was active in Great Britain and focused its practices on theurgy and spiritual development.

[3] Aubrey Vincent Beardsley (21 August 1872 – 16 March 1898) was an English illustrator and author. His black ink drawings were influenced by Japanese woodcuts, and depicted the grotesque, the decadent, and the erotic.

[4] Moina Mathers, born Mina Bergson (28 February 1865 – 25 July 1928), was an artist and occultist at the turn of the 20th century. She was the sister of French philosopher Henri Bergson, the first man of Jewish descent to be awarded the Nobel Prize for Literature in 1927.

including a Triadex Muse, an early form of commercial AI from 1972, and two sculptures incorporating more recent AI. My shows usually start with research and then I try and make some forms or images that reflect that research or revolve around it. So that's the idea behind this show, and I would say that the process is pretty consistent with most of my work.
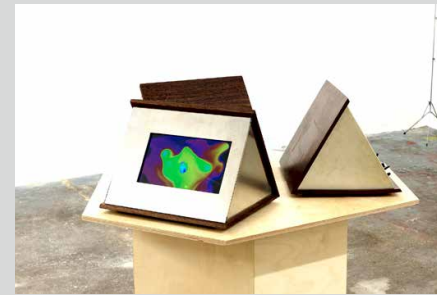
Triadex Muse
2023

Le Double Monde
2023

EC So how did you get interested in topics like artificial intelligence?

SB I had some experience with generative techniques beginning in the early to mid-2000s when I was working with the artist Mike Kelley[5]. We were collaborating and involved in several bands and interested in generative music and various sorts of stochastic ideas, like running multiple tape machines simultaneously and other ways of getting chance into the sound and getting the ego a little bit out of the way. In his art and music, Mike would usually do a certain amount of research, set up a system, and then just let it run.

[5] Michael Kelley (October 27, 1954 – c. January 31, 2012) was an American artist. His work involved found objects, textile banners, drawings, assemblage, collage, performance and video.

I continued experimenting with stochastic music and in 2010-2012 there were more and more apps and other types of software that could help you generate music, and so I started working with them. These apps and software mostly used cellular automata[6], which was an approach to generative systems related to AI and Machine Learning. I started working with programs like Noatikl[7] and Wolfram Tones[8] - back then, in the early 2010s, they were cool because they had some parameters, but the output was generative. I started using them as the basis for some compositions.

From 2014-2017, I focused more on generative and AI-based works, incorporating AI and ML into my compositions for performances at the Mt. Wilson Observatory and the Getty Center. And then in late 2019, early 2020 – I put together a class for CalArts and we started building a Machine Learning Lab which didn't entirely work out- we've got a couple of machines now. During the pandemic what I used to call 'toy AI's' began getting much more sophisticated and I what guess you could call 'server-side consumer AI's' emerged- one of these was Runway[9] which could run StyleGAN[10]. I did a performance in 2019 at Blum and Poe in LA and everything in that performance was generated by different types of AI including StyleGAN video, an AI-generated voice reading AI-generated text, and all of the music. So that was when I really got into it.

[6] Automata is the plural form of automaton. An automaton is a relatively self-operating machine, or control mechanism designed to automatically follow a sequence of operations, or respond to predetermined instructions.

[7] Noatikl is a 16 track MIDI generating powerhouse with 120+ parameters. Many generative music templates are included and MIDI out support lets you drive external MIDI synths/samplers.

[8] Wolfram Tones is a neat offering from Wolfram that students can use to can play with sample sounds and rhythms to create new own sounds. Wolfram Tones uses algorithms, music theory, and sound samples to generate new collections of sounds.

[9] RunwayML is a platform for artists to use machine learning tools in intuitive ways without any coding experience for media ranging from video, audio, to text.

[10] StyleGAN is a generative adversarial network (GAN) introduced by Nvidia researchers in December.

Since then, consumer AI has become more accessible and advanced, with tools like Stable Diffusion[11], DALL-E 2[12], and Midjourney[13] radically improving the visual results. While I haven't had any mind-blowing experiences with consumer AI yet, I do think it has improved significantly since I first started exploring generative techniques.

EC AI seems to be evolving at almost the speed of light.

SB Yes, it's very fast. I've been interested in the theory behind this stuff since the 90s, and everyone back then said that there was going to be a moment when things started to really take off. It seems like we're maybe at the beginning of that takeoff.

EC Regarding your band in the 90s, Machines of Loving Grace[14], it's interesting to note that it was named after Richard Brautigan's poem All Watched Over by Machines of Loving Grace which has been interpreted in different ways - both as a utopian vision and as a satirical critique of that utopia. Can you share your perspective on the poem and shed light on why you and your bandmates chose to name your band after it?

SB I found the book in a garage when I was 19 and thought the name was interesting. I started the band with a couple of friends / musicians who became full partners in the band because I couldn't afford to pay them. Soon after, we got a record deal and then a bigger

record deal. Brautigan had written the poem – I don't remember the exact year, but it was in the '60s, which was pretty far ahead of the curve. There was a lot of techno-optimism at that time but also a strong suspicion towards computers, especially in the counterculture.

Cybernetics[15] conferences as early as the 1950s had scientists and computer experts excited about AI. However, what followed was what's now known as **the AI winter** - a period in the late 60s through the 70s when progress in AI didn't move as quickly as anticipated. While the AI Lab at MIT produced things like the Triadex Muse during this time, progress was slow and it didn't translate well to the wider public. I think that there was a perception that AI was dead. It wasn't until the late 80s and 90s that interest in AI picked up again, alongside the internet's growth. And of course, the internet busted out of just being the Arpanet, isolated BBSes, and AOL and became more and more integrated in the early 90s - that was around the time that I started the band. It was an interesting time.

There were a lot of techno-optimistic books and magazines that were visualizing more of an AI future. William Gibson's *Neuromancer*[16] and Neil Stevenson's *Snow Crash*[17] were popular cyberpunk science-fiction novels of that time that incorporated AI. Tech-focused zines and magazines like Boing Boing[18] and Mondo 2000[19] also gained popularity. Additionally,

[11] Stable Diffusion is a deep learning, text-to-image model released in 2022. It is primarily used to generate detailed images conditioned on text descriptions, though it can also be applied to other tasks such as inpainting, outpainting, and generating image-to-image translations guided by natural language descriptions, called "prompts".

[12] DALL-E (stylized as DALL·E) and DALL·E 2 are deep learning models developed by OpenAI to generate digital images from prompts.

[13] Midjourney is a generative artificial intelligence program and service. Midjourney generates images from prompts, similar to DALL·E and Stable Diffusion.

[14] Machines of Loving Grace was an American industrial rock band from Tucson, Arizona, best known for their song "Butterfly Wings". Named after the Richard Brautigan poem "All Watched Over by Machines of Loving Grace", Machines of Loving Grace formed in 1989. The original lineup consisted of Scott Benzel (vocals), Stuart Kupers (guitar and bass), and Mike Fisher (keyboards), with Brad Kemp (drums) added shortly thereafter.

[15] Cybernetics has been defined in a variety of ways, reflecting "the richness of its conceptual base." One of the most well known definitions is that of Norbert Wiener who characterised cybernetics as concerned with "control and communication in the animal and the machine."

[16] *Neuromancer* is a 1984 science fiction novel by American-Canadian writer William Gibson. The novel is considered one of the earliest and best-known works in the cyberpunk genre. Set in the future, the novel follows Henry Case, a washed-up hacker hired for one last job, which brings him in contact with a powerful artificial intelligence.

[17] *Snow Crash* is a science fiction novel by the American writer Neal Stephenson, published in 1992. Like many of Stephenson's novels, its themes include history, linguistics, anthropology, archaeology, religion, computer science, politics, cryptography, memetics, and philosophy.

[18] Boing Boing is a website, first established as a zine in 1988, later becoming a group blog. Common topics and themes include technology, futurism, science fiction, gadgets, intellectual property, Disney, and left-wing politics.

[19] Mondo 2000 was a glossy cyberculture magazine published in California during the 1980s and 1990s. It covered cyberpunk topics such as virtual reality and smart drugs. It was a more anarchic and subversive prototype for the later-founded Wired magazine.

a movement called Extropianism[28] emerged, which focused on transhumanist/ post-humanist ideas. Although the techno-optimism of the 90s eventually faded, I do think that it was hugely important to a lot of people back then.

The way I think about it is that a techno-imaginary was taking hold – people really wanted things like VR and AI. And then Ray Kurzweil[21] came along and wrote some very popular science books –*The Age of Spiritual Machines*[22] and *The Singularity is Near*[23], which, along with the work of scientists like Hans Moravec[24] and Rodney Brooks[25], helped infuse new energy into the AI field. The band was kind of a product of that milieu. To get back to Brautigan, have you read the poem?

EC Yes.

SB I should read a biography of Brautigan, because I don't really know too much about where his head was at when he wrote it. I read it mostly as ironic it could have been intended as techno-optimism or serious in a hopeful way...

EC I personally read it as serious.

SB He's talking about the Garden of Eden basically, and these kind of machine caretakers. But it's interesting because the time when he wrote that would have been around the beginning of the AI winter. I haven't read it in years, so I'll have to reread it and see if it still seems ironic to me or if it seems like he was optimistic, who knows, maybe he was half and half or maybe he just didn't know. I mean, that's kind of my opinion towards a lot of AI: I just don't know. As you remember from class, there are many aspects of AI that I think are somewhat worrisome, but you know, I guess we'll see.

EC In your class I was exposed to so many interesting views. Some of them are just mind-blowing, and some of them are as you said, worrisome. It's just very hard for me to have an attitude towards AI. If you were to define your attitude, what would it be?

SB I have a similar attitude. I think that we exist within a lot of systems over which we have very little control.

EC And very little knowledge as well.

SB We do. Many of the technologies are black boxes, and I suspect that what we know about them is only the tip of the iceberg of what actually exists or what companies and state actors are working on.

[20] Extropianism, also referred to as the philosophy of extropy, is an "evolving framework of values and standards for continuously improving the human condition". Extropians believe that advances in science and technology will some day let people live indefinitely.

[21] Raymond Kurzweil (born February 12, 1948) is an American computer scientist, author, inventor, and futurist. He has written books on health, artificial intelligence (AI), transhumanism, the technological singularity, and futurism.

[22] The Age of Spiritual Machines: When Computers Exceed Human Intelligence is a non-fiction book by inventor and futurist Ray Kurzweil about artificial intelligence and the future course of humanity. Kurzweil predicts machines with human-level intelligence will be available from affordable computing devices within a couple of decades, revolutionizing most aspects of life.

[23] The Singularity Is Near: When Humans Transcend Biology is a 2005 non-fiction book about artificial intelligence and the future of humanity by Ray Kurzweil. The book builds on the ideas introduced in Kurzweil's previous books, The Age of Intelligent Machines (1990) and The Age of Spiritual Machines (1999). In the book, Kurzweil embraces the term "the singularity". Once the singularity has been reached, Kurzweil says that machine intelligence will be infinitely more powerful than all human intelligence combined.

[24] Hans Peter Moravec (born November 30, 1948, Kautzen, Austria) is known for his work on robotics, artificial intelligence, and writings on the impact of technology. Moravec also is a futurist with many of his publications and predictions focusing on transhumanism.

[25] Rodney Allen Brooks (born 30 December 1954) is an Australian roboticist, Fellow of the Australian Academy of Science, author, and robotics entrepreneur, most known for popularizing the actionist approach to robotics.

Scott Benzel, Hybrid Monte Carlo, 2020. Regulation roulette wheel, regulation "pin," contact mic, motion detector, oscilloscopes, analog electronic circuits based on the equations of Henri Poincaré and Edward Lorenz (top: Lorenz "owl face," middle: Poincaré diagram, bottom: Poincaré-derived RC "chaos ladder"), circuits by AST, 73 x 20 x 41 in. Installation view, Mindless Pleasures, Bel Ami, Los Angeles, August 1–October 3, 2020. Courtesy the artist and Bel Ami, Los Angeles. Photo: Paul Salveson.

In the book *The Battle for Your Brain*[26], Nita Farahany[27] discusses thought-monitoring technologies and cognitive warfare . This phenomenon is already much larger than what we touched on in class. Instead of just an "attention economy" or "cognitive capitalism", Farahany argues that we're currently engaged in a form of what she calls "cognitive warfare."

I have a lot of misgivings about the idea that our thoughts could be surveilled very soon and that would of course have an AI component to it . Farahany talks about brain-machine interfaces like those developed by Neuralink[28] – another company that Elon Musk didn't build from the ground up but that he bought. The fact that not only Neuralink but a lot of other actors are working on these brain-machine interfaces suggests that there's a whole lot of opportunity for corporate or state - for lack of a better word - dominance to come out of this. It's a little scary. As a professor of law and philosophy, Farahany suggests that regulators and legislators need to become knowledgeable about these issues. However, the technology is way ahead of the law and way-way ahead of the legislators , which is a concern.

EC You were talking about all these concerns, and it seems that AI and capitalism are inseparable. Can we solve the systematic problems from within existing systems? Or do we need to radically change the systems?

SB I don't know. I don't want to sound like I've given up, but I do have an increasing foreboding. The systems are complex and at this point they are pretty advanced. There's a recent book called *Resisting AI: An Anti-fascist Approach to Artificial Intelligence*[29] by Dan McQuillan[30]. His feeling is that AI is essentially an elaboration or a further implementation of a lot of existing systems of dominance. So in other words, AI is not just coming from outer space - it's coming out of our current social systems, and it's intensifying them and it's doing all the things that they're already doing more efficiently – things like bias. There's a phenomenon called lock-in that describes how certain technologies become ingrained and difficult to change over time. For instance, the English keyboard system Qwerty is, by most measures, not the most efficient way to actually type. However, now that we've all learned to type on this particular keyboard, Qwerty is "locked-in". So there are certain things that are built into AI and built into capitalism which obviously will be harder to change the longer that they continue. McQuillan's take on AI is that it strengthens systems that often lead to repression- hierarchical systems as well as systems that are difficult or impossible to understand. You're saying "I use it every day." He's saying, "don't use AI. Just turn away from it." And I'm not sure that's the answer either.

[26] *The Battle for Your Brain: Defending the Right to Think Freely in the Age of Neurotechnology* explores the ethical challenges posed by emerging neurotechnology, highlighting the potential risks to privacy, freedom of thought, and self-determination in an increasingly interconnected world.

[27] Nita A. Farahany is an Iranian American author and distinguished professor and scholar on the ramifications of new technology on society, law, and ethics. She currently teaches Law and philosophy at Duke University where she is the Robinson O. Everett Distinguished Professor of Law & Philosophy at Duke Law School, the founding director of the Duke Initiative for Science and Society as well as a chair of the Bioethics and Science Policy MA program.

[28] Neuralink Corporation is an American neurotechnology company that develops implantable brain–computer interfaces (BCIs) based in Fremont, California. Founded by Elon Musk and a team of seven scientists and engineers, Neuralink was launched in 2016 and was first publicly reported in March 2017.

[29] The book *Resisting AI: An Anti-fascist Approach to Artificial Intelligence* provides an analysis of AI's deep learning technology and its political effects and traces the ways that it resonates with contemporary political and social currents, from global austerity to the rise of the far right.

[30] Dan McQuillan is a Lecturer in Creative and Social Computing at Goldsmiths, University of London. His research focuses on the resonances between forms of computational operation and their specific social consequences, especially in relation to machine learning & AI.

One of the things that technology does really well is incentivize us to use it, and I'm not talking about it as if it's sentient, but it's as if there is something built into it, where the incentives are so strong that it's very hard to resist: perhaps with technology we can make better art faster- and if this is true, it will extend not just to art, but to all fields. It's very hard for humans to resist because, to a greater or lesser degree, we're all engaged in competition. If other designers are using it, then you're probably like, "Well, I'd better use it too." This is also what Elon Musk uses as a justification for Neuralink - he believes that machines will soon be able to operate independently and communicate amongst themselves in ways that humans can't understand. To him, plugging our brains into the machines is necessary to keep up with this. This rationale has been questioned, but it remains a driving force behind Neuralink's development. Brain-machine interfaces are coming into existence because so many companies and state actors are working on them: suddenly, if I have a brain-machine interface and you do not, I have all sorts of memory and speed and things at my disposal that you don't necessarily have, so it creates inequities really quickly. But on the flip side of that, there could be a corporation X or state X that wants to get inside my brain, in the same way that various actors can hack into our phones and laptops. So there's a lot of interesting / terrifying stuff going on.

EC I don't even know if this whole idea of brain-machine interface is good or bad –

SB I think it's probably bad. Technology definitely increases one's power, but it also almost always aligns with existing power structures and intensifies them and makes them stronger. And usually when that happens, it's not good. As you saw when I pulled up that person's name on my phone, we're already outsourcing huge amounts of our memory and creative power to our phones and laptops, and a lot of our communication to social media. Marshall McLuhan[31] wrote a whole book about this in the '60s called *Understanding Media: the*

Extensions of Man[32]. The idea is that when we drive a car or Google something, it's almost like we've grown an extra limb or an extra part of our brain, an extension of our selves…and then something Neuralink comes along and just mashes it all together really quickly…

EC Going back to the competition idea, all the artists and designers now start to use AI tools like Dall·E to create design and art. Is it gonna harm their own creativity?

SB I'm not really sure. One of the things I've noticed is that for myself as an artist and composer, part of the reason I started working with generative music in the 2010s was that I got bored of my "go-to" patterns and tricks, and I was looking to break out of that and discover something new.

You probably noticed that the number of DJ mixes and DJs generally is way higher than it used to be, and it's probably approaching the number of people who are actually composing music. What DJs do is select things that exist and combine them. With generative music, I'm usually selecting the parts of it that I like and throwing out the parts I don't like. In other words, rather than using just my experience and my memory and my knowledge of music theory (which is pretty limited), I'm able to bootstrap myself. For now we're copilots, but there's probably going to be a moment when we're no longer copilots, and I'm just not sure what that will look like. It's a bit like theorizing about the afterlife…

As Ray Kurzweil wrote in *The Singularity Is Near: When Humans Transcend Biology*, a singularity in physics is a position in spacetime where gravitation overwhelms spacetime itself–commonly the edge of a black hole. Once you pass into the black hole, you're in a completely unknowable situation and the laws of physics as we currently understand them don't apply. And also, there's no turning back – you can't really be like, "Oh, we should turn around now." Similarly to the black hole analogy, what's everything going to look like the moment after collective machine intelligence surpasses that of humans and the machines are able to self-improve? That's the technological singularity.

[31] Herbert Marshall McLuhan CC (July 21, 1911 – December 31, 1980) was a Canadian philosopher whose work is among the cornerstones of the study of media theory. He predicted the World Wide Web almost 30 years before it was invented.

[32] *Understanding Media: The Extensions of Man* is a 1964 book by Marshall McLuhan, in which the author proposes that the media, not the content that they carry, should be the focus of study. He suggests that the medium affects the society in which it plays a role mainly by the characteristics of the medium rather than the content. The book is considered a pioneering study in media theory.

EC How would you imagine the future with AI in 20 years?

SB It's difficult to imagine what the future will look like, especially given how much things have changed in just the past three years. Charles Stross[33], in his science fiction novel *Accelerando*[34] suggests that there will be an increasingly surreal quality to technology as it gets more and more complex: he imagines things like a space-faring AI hive-mind based on the partially uploaded brains of lobsters and credit card companies evolving into AI weapons systems, and I think we're seeing the beginning of something like that level of AI-induced surrealism. Famously, William Gibson in his 1984 *Neuromancer* didn't predict cell phones, so he had the characters in the cyber-future talking on landlines. In other words, there are developments that you just really can't predict. For example, when I started working with StyleGAN, I didn't anticipate the widespread availability of diffusion models like Dall-E. AI is now accessible to consumers in ways that I didn't foresee three years ago.
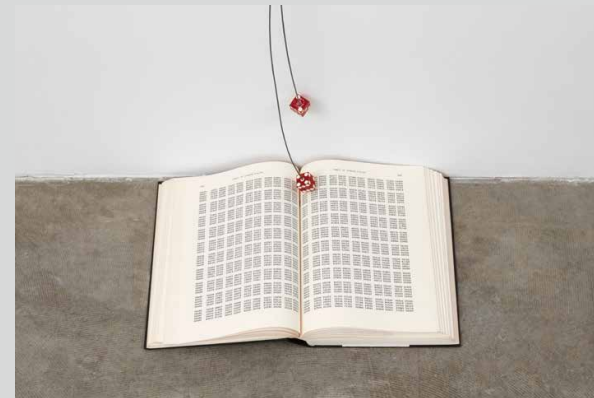
Scott Benzel, N'abolira (detail view), 2020. Stéphane Mallarmé's "Un coup de dés jamais n'abolira le hasard" from Éditions Gallimard, A Million Random Digits with 100,000 Normal Deviates published by the RAND Corporation in 1955, Stardust Casino and Hotel dice, wire, wood, glass, mirror, 66 1/2 x 22 1/2 x 11 in. Courtesy the artist and Bel Ami, Los Angeles. Photos: Paul Salveson.

EC What do you think of your role as an artist now that everyone has access to make art with AI?

SB That's a good question. This could change very quickly but currently I think artists have an advantage over machines in terms of bringing together formal and conceptual elements, and incorporating personal experience into the work. Randomness and personal perspective play a big role in art, and while AI can learn from every example of art that's ever existed, it may not be able to replicate the unique experiences and preferences that individual artists bring to the table. For instance, I grew up in Las Vegas and I had all of these unique experiences and I was raised by these very specific people. There are definitely artists that try to get rid of this self-expression or "subjectivity" and make things that are a little bit more objective, but the ability to put personal experience into our works (and the impossibility of entirely eliminating it) is maybe still where we have an edge. The combination of concept and form is not impossible for AI to do, but I haven't seen it done really well. Also, I personally like a lot of art and artifacts and people that are not statistically popular i.e. they are unusual or unique whereas algorithms are primarily attuned to popularity i.e. the norms resulting from crunching big data. However, this could change quickly, and I am open to the possibility that machines could catch up in a few years. Who knows?

[33] Charles David George "Charlie" Stross (born 18 October 1964) is a British writer of science fiction and fantasy. Stross specialises in hard science fiction and space opera.

[34] *Accelerando* is a 2005 science fiction novel consisting of a series of interconnected short stories written by Charles Stross. The book is a collection of nine short stories telling the tale of three generations of a family before, during, and after a technological singularity.