

act like a student and a teacher. When you have a dataset of images, in our case the flowers, that forms the basis of what the machine is going to learn from. Over a period of time the machine examines these images, the two sides go back and forth, and decides which of the images are acceptable as flowers. For us, this first process took about 30 days. After this period, you begin to get images that start to appear from nothing, from empty space.

From this empty space you can create both still images and moving images based on a time period that you define – in this case we chose five minutes but potentially it could be forever. The machine looks at the images that it has created and then imagines what would come next. You have no control over what it produces though. *Germination* was about the fifteenth attempt. Often the process begins well and then starts to imagine incorrectly and the moving images fall apart. We had this precise idea of what we wanted to happen and just kept trying until it materialised. Eventually this particular moving image was created that flows quite beautifully. We called it *Germination* because it was all about generating things and re-generating them, utilising the flowers - which naturally re-generate. It seemed like this really lovely little homage because one way you create a home is through planting flowers, developing nature around you, but there's also a really strong floral connection to mourning they are a memorial signifier – when people pass away you're just drowned in flowers. I found it quite poignant that there was this really small window in my early life of remembering and connecting with my Grandfather while he was alive, and that ultimately my memory of him was actually these plants. Even though the film looks like a digital animation, it is ultimately a documentary.

You describe the process of creation for this project as “slow, notoriously unpredictable and frustratingly unstable”. What was the most memorable part of this creative process?

In the end, the whole process was really enjoyable because you end up with something that you are ultimately happy with and pleased about. But, an especially frustrating part of the process, which actually was a bit of a learning curve for me, is that these models take a long time to train and you need a lot of data. We really pushed our limits in terms of the memory on my the computer and my phone which I used to take all of the photographs. It was a lot of time and a lot of energy to see the process through to the end. It was dealing with the sheer volume of data that was needed that was the most difficult part of the process.

The other thing that can be frustrating is that you have almost no aesthetic control over the outcome. So your relationship with the output has a lot of tension. We had to start the process a couple of times after it failed. It will start progressing nicely but suddenly the images start to go backwards and disintegrate - something called 'mode collapse'. So learning when to stop the process when it reaches a point that you're happy with, *before* it collapses is quite stressful - because aside from the amount of time and energy you've put into creating the data, it's also quite expensive to constantly use it as you have to rent space in a remote GPU in order to store the work. That was definitely a learning curve!.

Once you learn this, you can anticipate what qualities the machine will pick up. After a while we figured out that a lot of the images that we liked I had shot in the evening light, at golden hour. The first things the machine was picking up very well were these beautiful light qualities, but there was a lot of background noise and messiness from things in the background. The Cactus garden grows down the side of the house against a black wall, so I noticed they were looking far more aesthetically pleasing. So I ended up re-shooting the first section by holding a sheet of black card behind the flowers. This gave me a bit more control over the outcome as it focused the machine on the flowers themselves and kept them centered in the frame. The whole process has enabled us to work with it a lot more confidentially and experiment with different ideas both artistically and in our work practice.



BOY + GIRL

THIS IS WHAT I LEFT YOU

Mirabelle Field, Northart's Gallery Assistant and PhD student in Art History at the University of Auckland, interviews artist Nikki McLay, of Boy + Girl, on their artistic influences and interests in advance of their exhibition *This is What I Left You* at Northart.

Untitled, Hybrid 03. (2022). GAN image. Archival pigment print on backlit film, LED lightbox, edition 1/1, 450 x 450mm

How did you begin working in this the digital artistic space?

I began my training in Fine Arts, and then switched to a Design degree. The design process, which is my core background, had a lot of tech-based elements in it. I was never a very good coder or technologist by any means, but I've always liked that intersection between code and creativity and used to play around making experimental websites and animated films using old super-8 cameras I'd find at garage sales. About 8 years I began working on a remote team with an amazing woman called Davar Ardalan, who is an influential figure in cultural storytelling. I became a co-founder of her company, IVOW.AI, which pioneered work around what we termed 'Cultural Intelligence'. Through this, we championed the importance of weaving technology with culture, heritage, and tradition. We worked on many projects collaborating with academics and technologists, so by osmosis and necessity I began to deepen my knowledge of Artificial Intelligence (AI). Part of that learning process was examining creative ways of using AI. During the 2020 lockdowns there was a huge amount of extra time where I could play around and develop more skills. I was also connecting with other people I'd met around the world who were using AI to explore creativity who shared their techniques and helped me out too. Around the same time, Bryn Evans and I started Boy + Girl. We both connected over our interest in the ethical and philosophical side of working with AI. His 35-year background as a documentary photographer and filmmaker complimented where I came from. His process is slow, organic and requires a deep connection to a subject, so we found an inherent harmony, as we both share a similar outlook to the world and could see that working at the intersection of art and technology was how we wanted to focus our business. That's how Boy + Girl was born.

What is the experience of working with AI as a creative medium?

It's kind of a wild experience, and it's definitely been a journey. At the beginning, we started out being very fascinated by the potential creative possibilities. As you do in any medium, you get really excited about it. Then, over the past few years, there has been an emergence of publicly accessible online AI technology which opened up the gates a bit in terms of experimenting. Aesthetically, all of this technology looked the same, so I was personally disheartened and that the creative possibilities would be quite limited. However, as my confidence with the technical side of things improved I began to understand how I could build my own system. I then met a couple of people online who helped me with some of the tricky technological stuff and I was able to move forward and bring that clarity to Boy + Girl for our projects. Once you understand how something works you can start to see where you would add your own marks, control things, and build something exciting, so we use various types of AI in our work both artistically and creatively. In our business practice are particularly focused on building voice experiences using voice Conversational AI which is extremely fun.

As you can tell, the artistic experience has really been all over the place, because it's also a very frustrating process. There's this natural tension between the machine and yourself as an artist and you have to give things over and take things back in return, you really have to attempt to develop a trust and a relationship, which can be quite difficult, but eventually you and the machine find common ground and you can work together nicely. It's really changed our perception of creativity as a whole because as you're going through the process of creating work, the machine presents us with all these directions to take and helps develop ideas that we may never have thought of as humans. It's also rewarding because it's a challenge to get to each stage of understanding, and get to a point where you feel like you know what you're doing (and talking about!).

What are the advantages of working in a collective?

Obviously there are challenges, conflicts of creative vision when you are working with anybody, but we have learned that our strengths and weaknesses really compliment one

another. Going through the process of putting this show together I realised that one of my weaknesses is attempting see through this artistic mess – with the system we used there's this absolutely endless infinite number of possibilities, every time you run a line of code it creates a whole new body of work – so you have to filter through it and find images that works from a million possibilities. But Bryn, due to his years of refining his process, was able to pull everything together for us. Being part of a collaborative project can do wonders for your own personal development, confidence, and self-awareness, because you also get to draw on others' vast experience as well.

***This is What I Left You* is fundamentally a project about memory and the process of remembering. How did the idea for this project come about, and how did this medium impact the expression of this theme?**

The idea came about while I was trying to wrap my head around some of the deeper aspects of machine learning and AI, and trying to develop an understanding of how it can be used more eloquently for creative purposes. During this time, in lockdown, there was much more time to think about where you were and what was important to you, I think a lot of people were missing their families. An important personal aspect for me revolved around a place where I grew up, which was in this little cul-de-sac by the sea on the Mahurangi Peninsula. It was unique because my Grandfather lived at one end of the street, and my other set of Grandparents lived at the other. We'd spend quite a bit of time there in this little house with my Grandfather, but I realised that I actually didn't know him for that long - maybe only about four years before he passed away yet I continued to live almost next door to the home he built for another decade or so. So the place was a bit of enigma. I was thinking about the memories I had of him, and apart from a couple of interactions there wasn't much there. Mainly what stuck with me was the amount of time I had spent running around the garden. It was a huge overgrown garden and it was a wonderful space to hide and play.

I hadn't visited for about 25 years - so when we were allowed to leave the city again, I arranged a visit. I was really deep into thinking about AI and working on a couple of projects that encouraged more diverse datasets, I thought there was this lovely overlap between the way he created the garden and the way that this technology works. Because what you're building is called a neural network, so you're trying to replicate the way the brain works by feeding the machine information and allowing it to process and understand what it's looking at and create for you some sort of replica. Part of the process of working with these machine models and feeding it this information involves a term called 'seeding'.

My Grandfather existed before all this technology, so he didn't leave a digital trace like today's world. He planted literal, physical seeds, which grew these flowers, which replicated over and over again as life passed on around them. I realized that we could use this physical record as a living database, and we could seed the process with the same seeds that he had planted. It aligned with our professional approach to AI which - bringing a more considered humanist approach to how we find, gather and use data. I was quite fascinated by the idea that - if these machines use the same thought process that we do - if we showed the machine a depiction of these things that I remember, would it produce a version of my memories? There's a really lovely crossover here between the natural world and the machine world, and it was wonderful to be able to physically examine the data of our everyday lives, which is often intangible.

Germination, the video component of this exhibition, is a unique digital animation. Could you describe how this video was created, and what it intends to convey?

The process that I'm we're using is an open source algorithm called StyleGAN. A GAN stands for General Adversarial Network – this is a little bit of background that will help you understand the video a bit better: The General Adversarial Network is composed of two sides that compete with each other; one is called the Generator and one the Discriminator, and they