Anna Ridler uses AI to turn 10,000 tulips into a video controlled by bitcoin

Ruby Boddington
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Anna Ridler is an artist whose work uses technology, in particular machine learning. Unlike many projects in that sphere, which are used to rehash new and remix existing ideas and visuals, Anna is not using AI simply because it's available to her.

"I think about what it can do and how it can add to what I'm making," the London-based artist tells us. "What are the associations and connotations of using it? How can all of these different things go in and help amplify or construct the message or the thing I'm interested in and make it conceptually stronger?" Having studied at UAL, the RCA and Oxford, Anna is a considered artist whose work is posing fascinating questions about how technology will integrate into our lives in future, while reminding us of the human behind every piece of tech.

The bulk of Anna's recent practice has focused around tulips and the "tulip mania" that swept the Netherlands and much of Europe in the 1630s, when the price of tulips soared before dramatically crashing. She then recreates this in an algorithmic context. So far, the project has taken on three forms: *Mosaic Virus*, *Myriad (Tulips)* and *Bloemenveiling*.

Anna initially had the idea for *Mosaic Virus* – a video work generated by an artificial intelligence – but in order to complete the project had to first create her own dataset (or training set, as it's sometimes referred to). Amazingly, to do so, she took 10,000 photos of tulips and it's here where the crux of what makes Anna's work so interesting first arises. "The reason I stopped making my dataset was because tulip season ended – so even though it's a very digital piece, it was very much driven by the rhythms of nature." This dataset, which in turn became a work in its own right titled *Myriad (Tulips)* was then categorised by hand and fed to an algorithm.

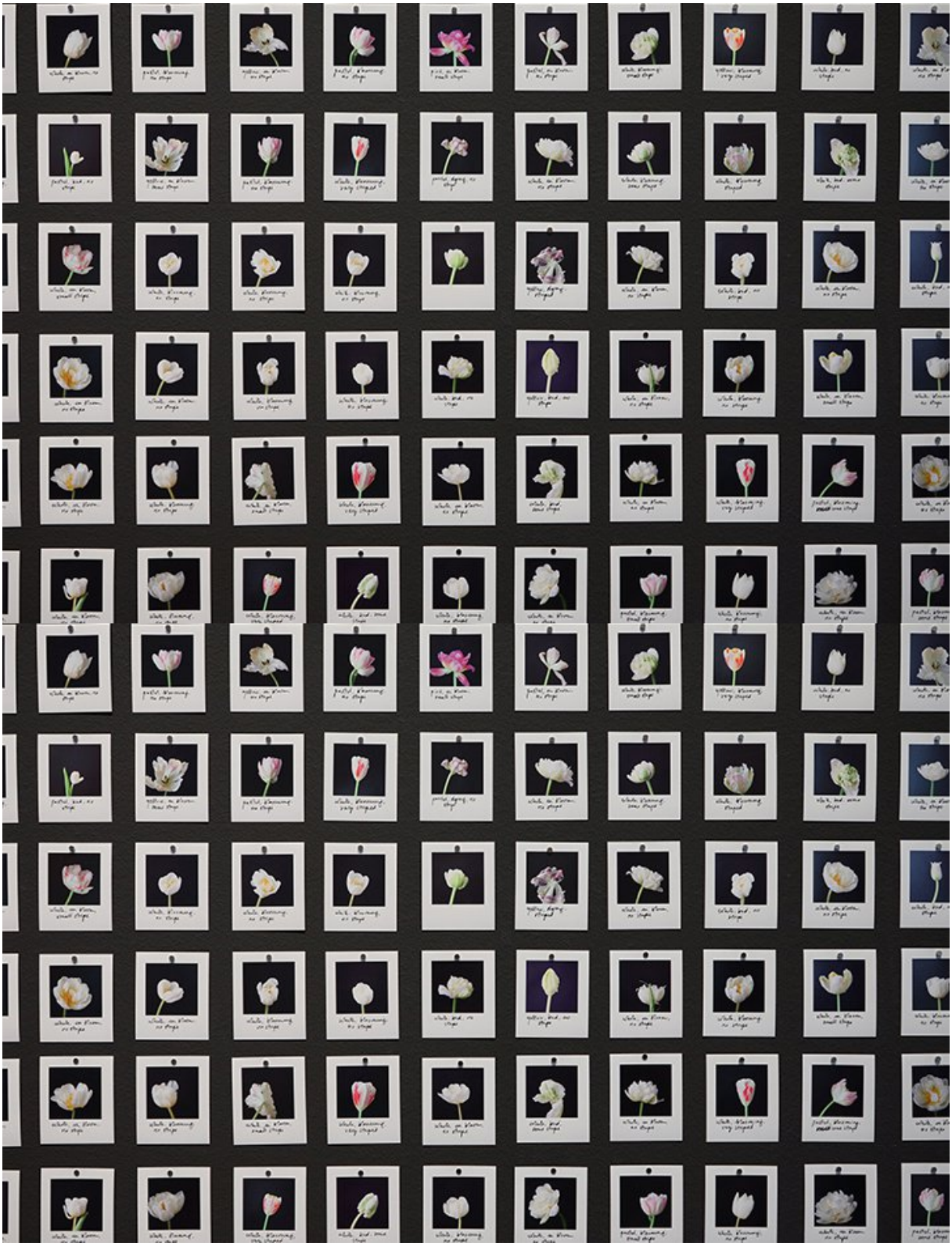
The result is *Mosaic Virus*, a project which draws parallels between tulip mania and the speculation currently surrounding cryptocurrencies. The video shows a tulip blooming, an updated Dutch still life for the 21st century, where the appearance of the tulip is controlled by the price of bitcoin, becoming more striped as the price of bitcoin goes up – it was these same coveted stripes that once triggered tulip mania. These stripes were caused by a virus which affected the bulbs known as the mosaic virus and it was a lack of understanding of what was causing the stripes that led, as legend tells it, to tulips being sold for the price of a house. Anna

explains: “I wanted to draw together ideas around capitalism, value, and the tangible and intangible nature of speculation, and collapse from two very different yet surprisingly similar moments in history.”

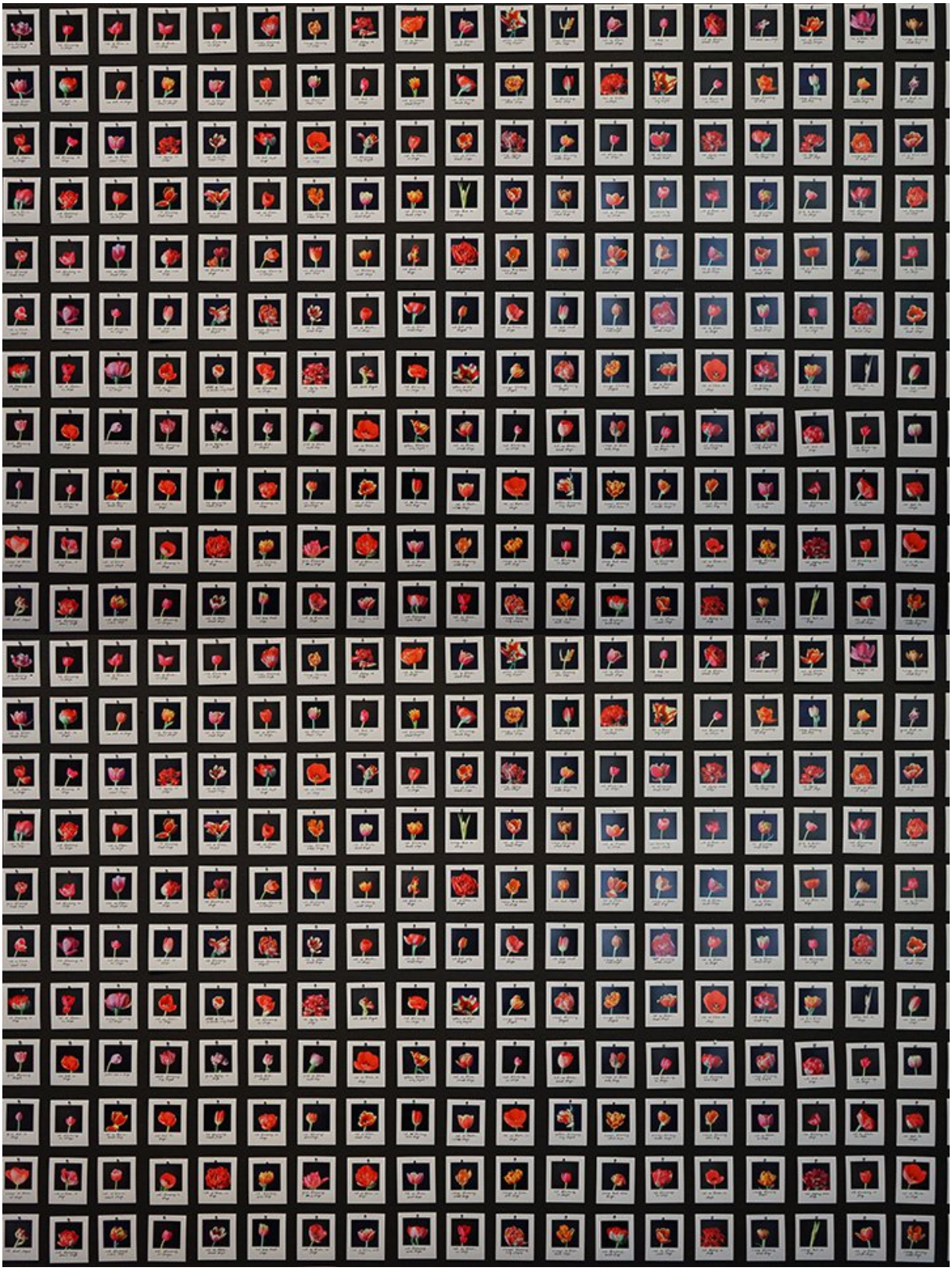
She continues: “It felt appropriate to use machine learning as a material – this piece is about bubbles and speculation and AI is in its own bubble at the moment. But moreover, there are interesting technical aspects that echo the concept. I also wanted to use GANs, not merely as a tool, but as another way of understanding the subject matter.” GANs are generative adversarial networks, in which two neural networks contest with each other in a game, given a training set; this technique learns to generate new data with the same statistics as the training set. GANs have a tendency to seem like they are improving and then suffer “mode collapse”, just like markets do. In *Mosaic Virus*, therefore, the AI’s pursuit of the perfect tulip, before its eventual collapse, mirrors the ups and downs of speculative bubbles. “So as a material, it is echoing its subject matter,” Anna adds.

Having completed *Mosaic Virus* (and *Myriad (Tulips)* along with it), Anna began a continuation of the work in the form of *Bloemenveiling* in collaboration with David Pfau. “_Blomenveiling_ is the creation of a technological marketplace for artificial tulips, echoing the auctions that sprung up in taverns throughout Holland at the height of tulip mania,” Anna explains. Short moving clips of the tulips were created by the AI and will be sold at an auction using Ethereum (a cryptocurrency) on the blockchain. The piece interrogates the way technology drives human desire and economic dynamics by creating artificial scarcity. This is because, once sold, the tulips mimic nature, blooming (playing) for a week before disappearing. “In this way, the decay and impermanence of the natural world are reintroduced into the digital world,” Anna continues, summing up what her practice is ultimately concerned with.

While *Blomenveiling* is a fascinating look at how our economy may develop thanks to the current mania surrounding blockchain and cryptocurrency, it injects the organic into an abstract sphere. Where *Myriad (Tulips)* and *Mosaic Virus* are excellent exercises in using technology for visual gain, they are most interesting because the former was categorised by hand, an act which once again forces an interesting overlap of the digital and the natural. It confronts viewers with the human elements of technology and data, reminding us that data is physical, that it started in the real world. In turn, it’s a reminder that we have agency over how it will progress and, therefore, a responsibility to make sure it progresses in an ethical manner.



Anna Ridler: Myriad (Tulips)



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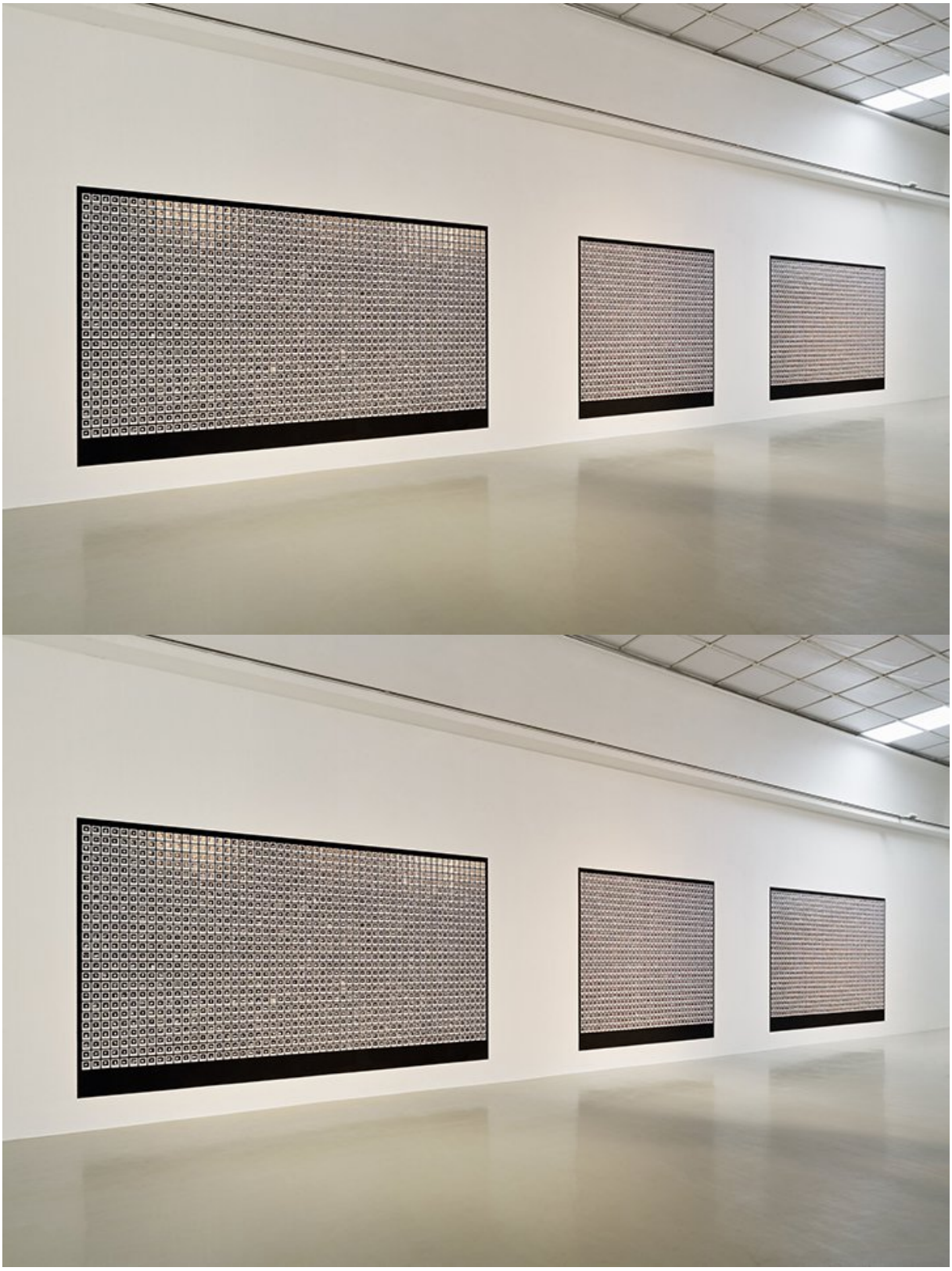

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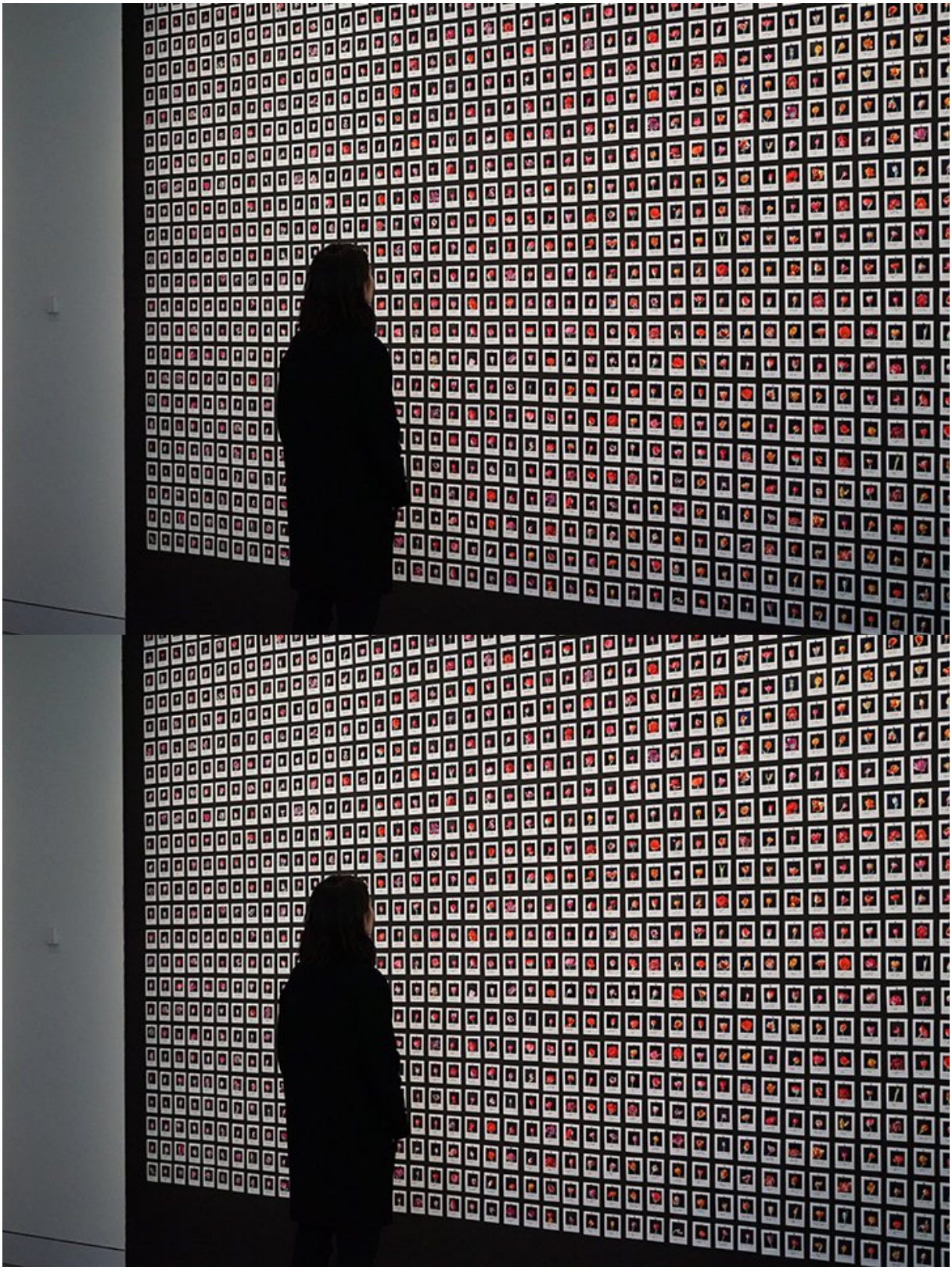

Anna Ridler: Myriad (Tulips)

Myriad (Tulips) (2018)

> I wanted to draw together ideas around capitalism, value, and the tangible and intangible nature of speculation, and collapse from two very different yet surprisingly similar moments in history.
>
> — *Anna Ridler*

Myriad (Tulips) (2018) is an installation of ten thousand hand-labeled photographs forming a dataset of unique tulips. The ten thousand, or myriad of, photographs were taken by Ridler over the course of three months, roughly the length of a tulip season, spent in Utrecht. Each photograph is carefully affixed one by one with magnets to a specially painted black wall in a laborious process to form a seemingly precise grid.

Exhibited in AI: More than Human, Barbican Centre, London, UK (May 16 - August 26, 2019); — The Art of Imperfection, Ars Electronica Export, Berlin, Germany (November 17, 2018 – March 3, 2019); Peer to Peer, Shanghai Centre of Photography, Shanghai, China (December 8 - February 9, 2020).

Featured in Financial Times, Google Arts & Culture, Bloomberg, It's Nice That and Hyperallergic.

Nominated for a Beazley Design of the Year award for her presentation of an alternative perspective on how to engage with artificial intelligence; demonstrating a departure from ownership and control of major corporations to a more personalized process of constructing and conceptualizing from the ground-up.

Mosaic Virus (2018, 2019)

Mosaic Virus (2018) is a single screen video installation displaying a grid of continually evolving tulips in bloom. For Mosaic Virus (2019) Ridler used three screens. The appearance of the tulips is controlled by artificial intelligence using fluctuations in the price of bitcoin. The stripes on the petals reflecting the value of the cryptocurrency. She draws parallels with the tulip mania of the 17th century; representing the hysteria and speculation around crypto-currencies. The work takes its name from the mosaic virus which caused stripes in tulip petals, subsequently increasing their desirability and leading to speculative prices.

Ridler trained a general adversarial network (GAN) on the set of ten thousand photographs of individual tulips from her work Myriad (Tulips). She used a technique called spectral normalization to improve the output.

The work was exhibited in Error—The Art of Imperfection, Ars Electronica Export, Berlin, Germany (November 17, 2018 – March 3, 2019).

Bloemenveiling (2019)

Bloemenveiling (2019) is an auction of artificial-intelligence-generated tulips on the blockchain in the form of a functioning decentralized application: http://bloemenveiling.bid. Ridler collaborated with senior research scientist at Deepmind, David Pfau to investigate whether blockchain could be used as a means of finding poetic substance within it.[18] The piece interrogates the way technology drives human desire and economic dynamics by creating artificial scarcity.

In the work, short moving image pieces of tulips created by generative adversarial networks are sold at auction using smart contracts on the Ethereum network. Each time a tulip is sold, thousands of computers around the world all work to verify the transaction, checking each other's work against each other. While the artificial intelligence behind the moving image pieces has the potential to generate infinite flowers, the enormous distributed network is used, at great environmental cost, to introduce scarcity to an otherwise limitless resource.