MONTAG

ISSUE 3 - CODING CREATIVITY

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MONTAG

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Launched by Grover in March 2017, MONTAG is a magazine that explores, on a deeper level, where new technology is taking us as a society. MONTAG reports from the fuzzy edge between new tech and everyday life and asks: when technology evolves in exponential leaps, what will we do next, and what does that change mean on a human level? Grover started MONTAG to encourage the reader to find out for themselves. **Read more at www.montag.wtf**

MONTAG ISSUE 3: CODING CREATIVITY

Issue 3 of MONTAG explores a future where technology and artistry start to become one entity. Creativity and the ability to enjoy or critique it is one of the fundamental traits that make us human. Every artistic leap is triggered by new technology: the camera obscura revolutionised painting, the printing press reinvented storytelling, and the sampler allowed hip-hop to flourish.

So if creativity is the act of taking the ephemeral – philosophy, stories, and concepts – and making them tangible, what does it mean when tomorrow's technology amalgamates movies and reality? Or individualises a novel for the reader? Or when AI creates art without human intervention? Welcome to a time when creativity itself becomes altogether different...

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THE MONTAGE PODCAST

THE MONTAGE is the companion podcast to MONTAG, and it's where writers Joe, Kathryn and Thom expand on topics explored in the magazine. Recent episodes included a deep conversation on the popularity of the Poop Emoji, pondered on whether Elon Musk has disposed of dead bodies in space (lawyer's note: he unequivocally did not), and, in a series of quizzes invented by Kathryn, Thom and Joe were made to sound very foolish.

It's all lovingly recorded in the Grover recording studios (OK, a very warm cupboard) in Berlin, and you can subscribe to THE MONTAGE on iTunes, Stitcher, TuneIn or Soundcloud at montag.wtf/the-montage-podcast

KATHRYN LAWRENCE

CODING CREATIVITY

*Creativity is one of the greatest mysteries of the human experience.
Artists and scientists alike have long wondered: where does it come from and how does it work?
Creativity is also one of the few things we can point to that makes us unique as humans. Which is why it's so thrilling, and terrifying, to think that artificial intelligence could become creative — if it hasn't already.*

The myths of creativity

The ancient theory was that creativity came from a higher power than humanity: that it was bestowed upon our puny human consciousness from some kind of infinite spirit, or universal force known to most religions as their flavor of God.

Writer Elizabeth Gilbert touches on this theory in her 2009 TED Talk, *"Your elusive creative genius."* She explains that in ancient Greece and Rome "genius" did not live inside of individual people, but was a spirit from the gods that lived in the walls of an artist's studio. The Renaissance flipped this idea on its head and centered people as creative geniuses (your Michelangelos, da Vincis, and other great men of history). She thinks that this is part of what puts pressure on modern artists that drives them to self-destruction, and questions whether we should go back to some form of this ancient understanding of it as an external force when we investigate the source of creativity.

Today, it's a popular theory that creativity comes out of problem-solving and a need to defy known rules or conventions. In this theory, creativity is credited with all great breakthroughs in science, medicine, and technology.

"How does a grapefruit-sized heap of meat crackling with electricity conceive of mathematical theorems, create beautiful art, discover the laws of nature, invent kitesurfing, and design buildings that look like sea shells?" — Arne Dietrich, *"Where does 'creativity' happen in your brain?"*

Arne Dietrich's work on the cognitive neuroscience of creativity defines creativity as "The ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, adaptive concerning task constraints)...Creativity is the epitome of cognitive flexibility. The ability to break conventional or obvious patterns of thinking, adopt new and/or higher order rules, and think conceptually and abstractly is at the heart of any theory of creativity."

Dietrich and many, many other teams of neuroscientists have tried to pin down the location of creativity in the brain, but haven't found a single spot that lights up when having creative ideas, or that you could apply electrodes to and stimulate to produce creative genius. Creativity uses almost every part of the brain.

All of this to say that we still don't fully understand creativity at all, but that is part of why we think it makes us special. Some are afraid that creativity may be the only thing standing between us and robots taking our jobs.

Artificial intelligence developing creativity is often one of the first signs in science fiction that we are truly fucked.

Painting robots, fiction and facts

In an iconic scene from *I, Robot*, Will Smith's detective Del Spooner is interrogating a robot that he believes has murdered its creator. He asserts that robots don't have emotions, and are therefore incapable of producing great works of art. The robot asks, "Can you?"

It's a great question, because it makes us wonder what standard we should hold artificial intelligence to when attempting to define its capacity for creativity. There are plenty of bad (human) artists in the world, why should we expect robot artists to be (evil) geniuses?

Most people have heard of the Turing Test, but not the Lovelace Test. It's named after Ada Lovelace, the original programmer of Charles Babbage's "Analytical Engine," the theoretical model of a functional computer which was conceived 100 years before the Turing machine.

Lovelace famously said, "The Analytical Engine has no pretensions whatever to originate anything. It can do [only] whatever we know how to order it to perform," meaning that it is not possible for computers to have a creative output.

The Turing Test tests if computers are capable of emulating humans, and the Lovelace Test tests if they are capable of creativity. In 1994, professor of cognitive science Margaret A. Boden wrote in the introduction to the book, *Artificial Intelligence and Creativity: An Interdisciplinary Approach*, a series of questions she called "Lovelace-questions."

The Lovelace-questions are as follows:

1. "whether computational concepts can help us understand how human creativity is possible"

2. "whether computers (now or in the future) could ever do things which at least appear to be creative"

3. "whether a computer could ever appear to recognize creativity"

4. "whether computers themselves could ever really be creative (as opposed to merely producing apparently creative performance whose originality is wholly due to the human programmer)."

And all of the answers to these questions appear to be yes.

In her later (1998) paper, "Creativity and artificial intelligence," she explains artificial intelligence can create new ideas in three ways: "by producing novel combinations of familiar ideas; by exploring the potential of conceptual spaces; and by making transformations that enable to the generation of previously impossible ideas... The ultimate vindication of AI-creativity would be a program that generated novel ideas which initially perplexed or even repelled us, but which was able to persuade us that they were indeed valuable. We are a very long way from that."

Of course, back in 1998, it may have seemed like we were a long way from a lot of technology we take for granted in the 21st century. 1998 was the year Google was founded, most people were accessing Usenet via Netscape or Internet Explorer on their Windows 98 PCs.

Boden has since acknowledged, in a 2015 View for the MIT Technology Review, that even though artificial intelligence is capable of creating great abstract works of art, the lack of cultural contextual knowledge that it has is its greatest weakness. AI can make good art now, but it can't yet convince us that it's good.

Matthew Putman, CEO of Nanotronics, has expressed a similar opinion in his essay, "Artificial Objectivity," that robots can't be great artists because they can't appraise their own work: "For art, objectively good is distinguished from subjectivity only by universal human values."

Luckily, the responsibility for creation and appraisal of art have never fallen to the single human artist anyway... well, maybe one:

"You know it's ART, when the check clears" — Andy Warhol

The Lovelace and Warhol definitions of art rely on the human critic being convinced: in the Lovelace test, they must be convinced that the programming is not entirely responsible for the output and that the output is satisfactory, and for the Warhol test, they have to be willing to buy it.

So... bring on the robot art fairs!

AARON is a painting robot that, according to the MIT Technology Review, had been collaborating with artist Harold Cohen since 1973. As early as the 1980s, Cohen was quoted saying he was "the only artist who would ever be able to have a posthumous exhibition of new works created entirely after his own death." Cohen passed in April of 2016, and, sadly, AARON has not continued to make new work, but this creative collaboration between man and machine was one of the first instances of robot paintings shown in galleries (although shows featuring work by both Cohen and AARON are still listed under "One-person exhibitions" in Cohen's biography).

The Review argues that AARON was a true artist working under Cohen in the lineage of Renaissance painters, whose works would often be executed by teams of apprentices and copyists, but still credited to the master. However, Cohen himself has been quoted saying that a robot would have to develop a sense of self in order to become creative in the same sense that humans are creative.

One of the things that was missing in AARON's painting process was visual feedback – a capability that many of today's artificially intelligent painting robots have.

Pindar Van Arman's CloudPainter is equipped with a custom 3D printed paint head, two robotics arms, deep learning, artificial intelligence, and computational creativity to compose its own original artwork. VICE Video's coverage of his robots show CloudPainter using style transfer, combining photographs and painting styles to create new portraits.

Simon Colton's painting robot called The Painting Fool can read emotions from photographs and use several different painting styles to convey that emotion in its portraiture. It can also read, and has used keywords from the news to create a collage about war. It even has a setting in which, when overwhelmed by too many negative keywords, it will refuse to paint.

A General Adversarial Network (or GAN) trained by the Art & AI Laboratory at Rutgers University, trained on over 80,000 paintings, created abstract paintings that were indistinguishable from humans'. When placed alongside images of real Abstract Expressionist paintings and work from Art Basel 2016, critics had to answer how the paintings made them feel, inspired, or if they found the paintings complex or novel (and remember, novelty is one of the keys of creativity!) The results: "Not only could the human evaluators not tell which images were AI-created, in many cases they rated the AI's artwork higher than the humans'."

How fucked are we?

Popular opinion seems to be that yes, robots with artificial intelligence are creative, but only as collaborators. So we return once again to the question of what creativity is — must it come from a singular, creative genius?

Psychology Today says, "This Makes Us Human": the ability to blend knowledge, taking old stories and new ideas, as the root of creativity. Augustin Fuentes, author of the book *The Creative Spark: How Imagination Made Humans Exceptional*, equates wisdom and creativity, and uses evolutionary psychology to back up his theory that creative collaboration is what made human society possible today. Else how could "fangless, clawless, hornless, naked upright primates" accomplish so much?

And perhaps creative collaboration is what will help evolve artificial intelligence as well. We shouldn't worry about AI painters demanding attribution (much less taking over the world) until we have *I, Robot* levels of autonomous artificial intelligence running amok.

For now, our fragile human egos are safe, if we believe that artificial intelligence is a collaborative force; but that actually makes them just like us already.

If we believe that the cult of the genius has passed, and that collaborative, not individual, creativity is the true measure of human intelligence, then AI has already more than sufficiently filled that role.

Or if we return to the theory that creativity comes from some kind of divine intervention, then from the perspective of AI, we are the gods.

JOE SPARROW

TODAY'S DYSTOPIA: THEY LIVE

The world often feels like a dystopia at the moment. In MONTAG's Today's Dystopia series, our writers take a sideways look at fictional dystopias, compare them to reality, and ask: how close are we to living in tomorrow's dystopias today? Joe Sparrow sighs deeply and compares classic low-budget sci-fi movie They Live with the real world...

Pop culture allegories don't get much more "pop" than *They Live*. Its main star is a pro wrestler, it's directed like a low-budget 80s MTV video, the script is curt, unfussy and full of holes. There's a lengthy, seemingly gratuitous and unintentionally hilarious six minute street fight scene – over a pair of sunglasses – in the middle of it all.

And yet with each year that passes since its 1988 release, *They Live* reveals itself more and more to be a stiletto-sharp appraisal of the consumerism, capitalism, and inequality that saturates society — and how it is slowly, silently strangling us, right under our noses.

They Live is as much of a horror movie as director John Carpenter's other more famous films, *The Thing* and *Halloween*. But instead of supernatural shocks and spills, the viewer might reasonably conclude that in *They Live* the horrorshow feels real, and not only are we living in it every day, but we're helping it consume us.

The film's premise is as stupendously silly as it is simple: a homeless, jobless man played by wrestler "Rowdy" Roddy Piper searches for employment in LA. He's at the bottom of the heap, as his surname, Nada — meaning "Nothing" in Spanish — makes clear, and his struggle to find work is juxtaposed with the wealth and rampant consumerism of Reagan's 1980s.

Having broken into a closed church, John finds an unmarked cardboard box full of sunglasses. In the glaring Los Angeles sunshine, he slips a pair on — and to his horror, they reveal the real world to him for the very first time.

Does any of what John sees sound familiar? How about a gigantic wealth gap between the gilded top **10**% and a vast population who don't know when they'll be paid next? A bloated middle class who believe that ultra-wealth is just within their grasp if only they keep working themselves into the ground? A bombardment of multimedia messaging seducing us to part with cash for products that'll get us that bit closer to the elite? A corrupt ruling class that promises us everything is better than ever?

Slip on your sunglasses as we peer into the cold heart of today and compare how close today is to the dystopia of *They Live*. We'll mark each scenario out of five sunglasses (🕶), in honour of John Nada's iconic shades.

Hyper-commerciality and persuasion to conform and spend:
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When John Nada dons the sunglasses in *They Live*, they reveal the true message on billboards: the stark command OBEY. Ads featuring bikini-clad babes are a front for MARRY AND REPRODUCE; lifestyle magazine covers reveal CONFORM; radio transmitters drone the message SLEEP…. SLEEP… 24 hours a day.

John Carpenter said that *They Live* sprung from a realisation that the apparently bubbling economy and positive messaging from politicians had a distantly-connected flip side: he was constantly being pitched products.

"I began watching TV again. I quickly realized that everything we see is designed to sell us something... It's all about wanting us to buy something. The only thing they want to do is take our money."

Nearly 30 years after *They Live* was filmed, what do today's creative minds think about the persuasively commercial nature of media today?

Edgar Wright, director of hit movies *Baby Driver* and *Shaun of the Dead*, tweeted, *"If you remade They Live now, the twist would be that you don't even need the glasses."*

But why? Maybe it's because the tools we use to interact with the world are so blatantly manipulative and the people that use them are so blatant in their manipulation.

Facebook's "Data God" was Jeffrey Hammerbacher. He figured out how to slice up all the data they have on you, which then helped the social media giant make more money than all the gods combined.

He left Facebook because he was tired of seeing, in part, creativity drained from the most gifted people. His off-the-cuff observation – *"the best minds of my generation… are thinking about how to make people click ads. That sucks."* – has become a defining comment on our digital age.

There's an icky amorality to the work of these brightest minds that create an app that values your time; which is to say, all of them.

By eagerly copying the technology that keeps punters gambling on video slot machines, they literally want to make you addicted to their app. Why? To see more adverts, mainly.

And Banksy, whose brash people-pleasing work puts anti-authority messages in front of millions, has some thoughts on advertising:

"The thing I hate the most about advertising is that it attracts all the bright, creative and ambitious young people, leaving us mainly with the slow and self-obsessed to become our artists. Modern art is a disaster area. Never in the field of human history has so much been used by so many to say so little." OBEY, indeed.

A super-elite using technology to enslave humanity:
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John's magic sunglasses allow him to see that the wealthy people around him are actually aliens who have secretly assimilated

society, assumed wealthy positions of authority, and put in place a scheme to control the other 90% through media, advertising and branding.

So far, so preposterous — although these out-there ideas are fairly well-worn IRL, too.

Ex-Coventry City goalkeeper, ex-BBC broadcaster, self-proclaimed "son of God" and conspiracy theorist supremo David Icke believes that the world's elite — notably, HRH Queen Elizabeth II — are part of a shape-shifting reptilian race who enslave the rest of us.

Except, wake up sheeple: it's actually our celebs who are in charge, and apparently it's mainly female music stars. A quick Google reveals that, to some conspiracy theorists, Beyonce is Satan; Rihanna, Miley Cyrus, Katy Perry, Nicki Minaj and Shakira are lizards; and that there must be a lot of evenings put aside for world-domination planning in the Knowles-Carter household, as Jay-Z is also an Illuminati puppet.

OK, this is all ludicrous. But if the powerful, wealthy, and hyper-influential cabal of modern celebrity family empires like the Kardashians or the Hadids could be considered to be our social "super elite," then their mastery of social media is — in a small way - "controlling" the hundreds of millions that elect to follow their idols.

And whenever one of these elite convinces a follower to buy the now-ubiquitous fitness teas, waist trainers and teeth whiteners that they advertise, they trap one more puny, working-class human into a cycle of financial dependence.

OBEY.

Magic sunglasses that reveal the truth of the world around you:

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There is already technology to rival the most iconic of *They Live*'s props.

When the viewer finds out that billboards are duping our hero, the most striking realisation — after taking on board the huge plot twist — is an understanding of just how surrounded we are by adverts, billboards, images, and signage imploring us to buy... stuff.

Brand Killer is a custom Augmented Reality headset that scans the world in front of the wearer, recognises any brand logos that stray into their field of vision — and then blurs them out.

Brand Killer is ad-blocker IRL, and it answers an utterly compelling question: what would your world be like if it was completely unsullied by brand logos and adverts?

However - and now, please do not adjust your aluminium foil hat - Brand Killer suggests a way our tech overlords could grab a little more control over us.

Soon, AR glasses will be everyday tech. So what if Brand Killer was used nefariously, and instead of spotting ads and blocking them, it replaced ads with ads tailored specifically to us instead? You couldn't escape. And why would you want to?

OBEY.

Overall score:

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They do, indeed, Live! (Kind of.)

**OK, maybe there aren't aliens enslaving us (sorry, David Icke)** but we certainly do seem to be our own worst enemies with regards to allowing our intentions to be "influenced" by those we follow online.

Maybe, then, today's version of popping on John Nada's glasses is to voluntarily switch on flight mode, and step away from the internet for a few days: and only then can we see the unfiltered truth – and finally OBEY ourselves.

The design of everyday things has reached its pinnacle; life is comfortable and ergonomic thanks to Komfort Future Technologies products.

Instead of dealing with the mounting problems of the overdeveloped world by alleviating them with technology, they are simply made bearable through the miracle of impeccable product design!

The following products have been engineered for MAXIMUM LEISURE and MINIMUM EFFORT, and are some of our favorite recommended staples for all households. Whether you live in a pod or an urban skyfarm, simply download the 3D printable files from your local registered retailer of home goods, and enjoy the ease of Komfort Future Technologies hot off the maker in a snap.
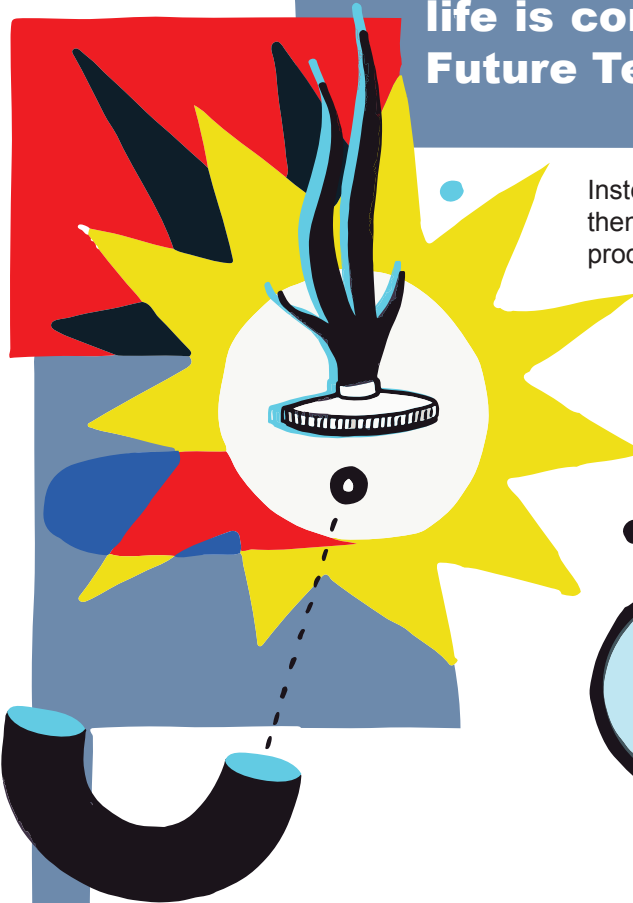
THE TUBE

Unfortunately, overdevelopment has given our Mother Earth a little indigestion. Humanity is just a too-spicy topping on the planet pizza, which is why water comes out of the tap discolored and off-gassing unsavory fumes.

These little belches make drinking straight tap water a big no-no. But home filtration tech is too slow! Remember those old water pitchers with the charcoal inserts that every passive aggressive roommate on the planet would refuse to replenish?

The Tube from Komfort Future Technologies has revolutionized water drinking, with a hands-free interface and a 20-foot self-cleaning piping system.

Simply connect The Tube to your kitchen or bathroom taps and install the business end (that's the part you drink from!) next to your screen viewing station of choice. Water will ambiently filter through the patented system and store itself for your drinking pleasure.

To partake, simply tilt your head towards The Tube to dispense hydration into your mouth.

Drinking from The Tube has been proven to increase daily hydration by 110%, while saving you time and energy.

Upgrade The Tube with Komfort Foods Flavor Pax now available in Lemon, Pudding, and Salt.

THE SLEEPER CAR

Waking up every day and getting out of bed for work used to be such a hassle.

With the patented technology of Komfort Future Technologies Sleeper Car, you no longer have to.

Before retiring to the seductively soft Flying Dutchman synthfoam slab for your evening slumber, use the integrated maps interface to program your workplace location and intended arrival time.

You'll be ready to get to work having slept through your morning commute and bathed in a mist of revitalizing antimicrobial gel.

For an additional boost, upgrade to The Sleeper Car CHARGE to infuse your morning mist bath with transdermal caffeine. Up and at 'em!
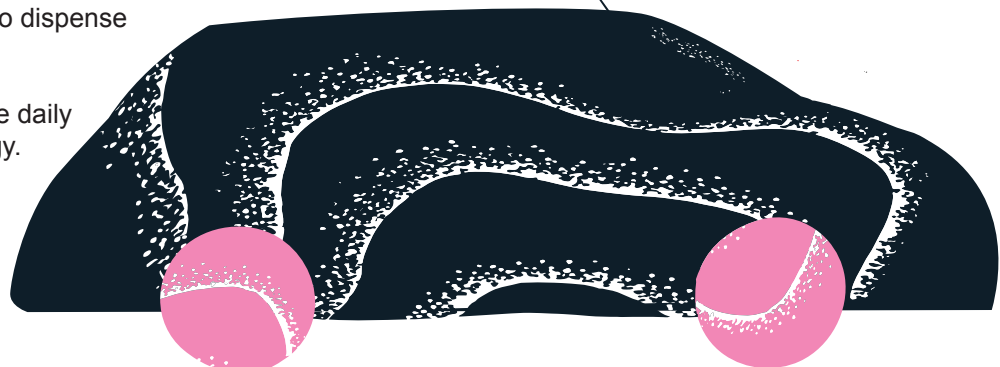
Living the future

with Komfort Future Technologies!

is easy!

THE PHOLDER

Gone are the days of tapping and scrolling by hand, and good riddance.

Generations of people in the age of the smartphone developed freakishly muscular hands from constantly clutching fragile, glass-screened devices and tapping furiously at them 24 hours a day.

With The Pholder, your hands will stay proportional to your body and you never have to worry about dropping your costly devices again.

No matter where you go, your phone will sit at a comfortable distance from your face for reference. Gaze Activation ensures that the screen is on whenever you look at it.

Plus, The Pholder has several settings for phone activities built in, and can be customized to sync with the apps and social styles you use most regularly.

Default functions include:

- Scrollr, automatic scrolling based on eye-tracking behavior
- Checkr, automatic opening and re-opening of frequently used apps on a customized timer
- Likr, automatic posting of approval for content consistent with the user's personal brand data

FUN WITH NEURAL NETWORKS

Janelle Shane is the reigning queen of making funny, silly, and downright bizarre texts with neural networks. She's an electrical engineer who works with holographic laser beams by day, and plays with neural networks in her spare time.

Her projects use char-rnn, a type of neural network which she explains by linking to Andrej Karpathy's "The Unreasonable Effectiveness of Recurrent Neural Networks," which details how recurrent neural networks process the data fed into them, such as the complete works of William Shakespeare, and produce something that looks exactly like Shakespeare, but is a genuine fake.

Andrej Karpathy is currently the Director of AI at Tesla, and his blog and github page have been cited by innumerable data scientists, hobbyists, and others interested in learning about how neural networks work and how to set them up themselves for fun and profit.

Janelle Shane's projects started going viral in 2017 with a popular one being a neural network that could design and name paint colors. Some of the paint names it invented include a drab olive green deemed "Clardic Fug," a pale pink called "Bank Butt," and a light mauve with the moniker "Stanky Bean."

Her conclusion: the neural network has "really really bad ideas" for paint names.

But if you think Clardic Fug, Bank Butt, and Stanky Bean are as weird as it's going to get, please read on.

What's in a name?

Names are short and pretty easy for a char-rnn network to re-arrange and re-combine into something that sounds vaguely plausible to us, so many of her projects have involved naming conventions.

Cheese Breeze and beer please

Training the network on 1,500 names from the My Little Pony Friendship is Magic Wiki, she had one experiment naming new My Little Ponies. With names like "Rainbow Dash" and "Fluttershy" already extant in the Ponyverse, this one was marked as a partial success. While plausible ponies like Sunshine Star and Glowberry were produced, there were also ponies like Cheese Breeze, Apple Ronch, and Groan.

A similar project created craft beer names, with a delightful degree of realism. Look out for the Dang River IPA, Frog Trail Amber Ale, and the Sir Coffee Stout on your next trip to the neural network taproom.

May the farce be with you

Another project creating Star Wars character names unsurprisingly produced a lot of Siths at the lowest creativity levels, including "Darth Darth." And wasn't Darth Teen the villain in The Force Awakens?

She also created one for Star Wars planets (with extant names like "Tatooine," and "Hoth," anything is possible) and used Twitterbot @i_find_planets to flesh out their descriptions. If you haven't had your personal planet found, we recommend tweeting "Planet, please!" at @i_find_planets for a planet of your very own.

Foppin and Popchop

Shane's project to produce cat names was trained on several hundred names from a cat rescue in Alabama, and several thousand cats registered in Toronto, which should have created names following North American cat naming conventions.

But she first trained the network on the wrong data set, using a list of fantasy names by J. R. R. Tolkien, George R. R. Martin, and others, producing such exquisite cat names as Mankith, Belfine Bracken, and Grim Wynne.

Eventually (when trained on the correct data set) this project resulted in such suitable names as Snox Boops, Foppin, and Mr Gruffles. Other cat names that she deemed less successful, but we must beg to differ: Sofa, Pope, and Pissy.

She also named guinea pigs for the Portland Guinea Pig Rescue: Popchop and Fuzzable. If The Adventures of Popchop and Fuzzable isn't a buddy comedy in the making, what is?

The best of the rest

Most people think anything could be a band name, and with bands like Shpongle, Spoon, and !!! out there, it's hard to dispute these neural network names' plausibility: The Freights (which probably sounds like The Shins, but recorded from inside a boxcar rolling down a lonely track at midnight), Nighty Daggers (maybe something like the Arctic Monkeys? but with more stabbing), and Skins of Space (which was definitely a rejected name for the glam rock band that would become The Darkness).

She was also able to name metal bands with a huge amount of data (100,000 bands including genre and country of origin) and I personally can't wait to go see Death from the Trend, the Black Metal outfit from Croatia, next time they tour with the Russian Melodic Death Metal band Inhuman Sand.

The show must go on

A neural network trained to create Broadway productions, including closing and opening dates, produced plays that were not limited in their performances by the constraints of linear time, or the normal rules of decorum in naming conventions.

Results included a comedy entitled Butt, which ran for over 7 years and was only performed once, and a much more successful play called Fart, with a 4-year run and performance count of 23 times.

Wise or otherwise

Three more of her experiments relied on tricky human patterns of speech: proverbs, fortune cookies, and knock-knock jokes.

Many of the ancient proverbs sound like they were dreamed up by the Inspirobot and could pass: "No wise man ever wishes to be sick." While others revealed a strange obsession with oxen.

The fortune cookies produced almost no usable answers. But the knock-knock joke generator produced this laugh-out-loud gem that you will definitely want to use at parties:

Mastchar-rnn chef

Saving the best for last, Shane's most hilarious project to date was trained on 30,000 cookbook recipes, and based on Tom Brewe's project to create recipes using a neural network.

The results sound like something out of the surrealist cookbook by Salvador Dali *Les Diners de Gala*, or from the *Manifesto of Futurist Cooking.*

Combine chunks and sprout clams

The network created disturbingly vague ingredients:

1 cup mixture
1 teaspoon juice
1 chunks

and oddly specific ones "that you could plausibly ask for at Whole Foods and act all disappointed when they don't have any" such as "milked salt."

Which combined with dubious cooking instructions such as "Fold water. Roll into small cubes." and "Sprout clams; add vanilla." to produce the most improbable meals since bread in a can.

Just for fun, she once gave her cooking network the complete works of H. P. Lovecraft, and asked it to complete sentences, or start them, producing such spooky instructions as:

"Coat apple slices with strange things."

"Cook over medium heat until thickened and bubbly. Spoon over bizarre eyes."

"Sometimes, in the throes of a nightmare when unseen powers whirl one over the roofs of strange dead cities toward the grinning chasm of Nis, it is a relief and even a delight to make the soup."

The cake is a lie

Here's one recipe for a "cake":

BAKED OTHER LIE 1993 CAKE
appetizers, fish
8 rounds; chicken
¼ lb butter (soaked)
1 can tomato sauce (½ lb)
1 salmon steaks sauteed
½ teaspoon red pepper, chunked
1 tablespoon margarine or oil.

One intrepid fan, Jono Ellis, actually baked a vaguely-chocolate-chip-cookie-related recipe created by Shane's neural network, with the secret ingredient of horseradish.

They did not follow the instructions, only the ingredient list, and said it made a very fine cake-like mixture:

"The horseradish is a subtle background flavour and the overall spicy, peanut-y, chocolate-y flavour is ace."

In an interview with NY Mag, Janelle Shane said she tried the recipe herself and,

"It was the most horrible chocolate thing I have ever tasted in my life. I opened the oven and my eyes just watered. It was so bad."

She then reveals that she brought cupcakes of it to two different parties, and none of the guests shared Ellis' opinion on the palatability of the baked good:

"The two different parties that I took it to, I found out that somebody had quietly taken a bite out of one of these cupcakes, and abandoned it somewhere."

Taste test

In interview with the Daily Dot, Shane was asked whether she thought computers in the future could create recipes that would actually be good to eat:

"I could imagine a consciousness appreciating food even with no way of ingesting it—as long as they had sensors to pick out nuance and complexities the same way we might appreciate a symphony or a painting."

Relying purely on the text of cookbooks, rearranged however which way the neural network pleases, has none of the nuance or complexity of taste bud sensors, but produces an absurdity that delights the mind more than a tasty snack.

And for creating or recreating things like humor or wisdom, the char-rnn algorithms do about as good a job as can be expected of a non-thinking entity; it's probably a good thing that computers haven't developed a sense of humor yet.

But maybe we don't need nuance and sensitivity for everything. For the things that really matter (like naming bands, cats, and craft beers), the proof is in the pudding.

JOE SPARROW

IMITATE TALENT, STEAL FROM GENIUSES: WHEN TECHNOLOGY COPIES ART

Creative breakthroughs don't just happen. Brilliant artistic leaps don't fall out of the sky, or out of the minds of "geniuses": they come in the wake of new technology.

Give humans an opportunity to work with something at a slight deviation to its intended use, and boy, will they grasp it with both hands. And the invention of a single piece of tech can create unintended outcomes.

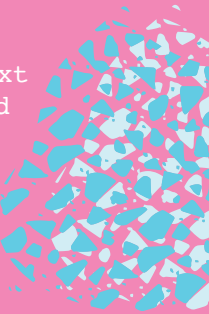For instance: children's favourite squishable, fluff-collecting play-stuff, Play-Doh, was initially marketed as a wallpaper cleaning product. It was only when kids – the purest creative minds of all – started globbing handfuls of it together that a pivot to playfulness took place.

Meanwhile, in adult-world, one small box – the Roland TR-808 drum machine – had a profound effect on pop culture.

Designed to make backing tracks for semi-professional musicians to jam too, emerging hip-hop heads got their hands on it, tweaked the sounds, and made it the backbone of the sound of the first ten years of hip-hop. Oh, and Kanye named an album after it.

The constraints imposed by tech creates new windows of innovation: something as innocuous as Twitter's 140-character limit actually forced millions of people to communicate in new ways: more succinct, more inventive, with more emojis, with more gifs, more like weird-Twitter's

crown Prince, @dril.

It's also why Twitter's recent bump to a 280 character limit was received with plenty of derision by users like @poniewozik:

"The 280-character limit is a terrible idea. The whole beauty of Twitter is that it forces you to express your ideas concisely (1/47)"

Beat Art

It's a simple enough progression: new stuff begets new stuff. But what about when it becomes a feedback loop – where the art influences the technology? What about when creativity works the other way?

Remember: *everything is a remix now.* Thus, the division between creators and technologists has shrunk to a cigarette-paper's width. Which is why technologists are now thieving ideas

from the creatives, just as the creatives once stole from them.

Novels have spawned plenty of "real" versions of imagined technology. Even something as deliberately quirky as *The Hitch-Hiker's Guide to the Galaxy* seems to have a lot in common with today: Google Translate is essentially the Babel Fish, and the Guide itself is essentially a smartphone and a link to Wikpedia.

One TV show in particular gave pop culture a glut of tasty ideas to bring to life: *Star Trek's* Replicators are advanced 3D printers, the Holodeck is essentially an Augmented Reality device, and even the Teleporter kind-of exists now (but is only really useful if you are a single photon interested in travelling 88 miles, which is the most that has been achieved so far.)

But there are two big recent touchstones in pop culture that have very directly spurred designers, technologists, and #makers to point our future in the same direction as fiction.

And they're both from a place where the job title "Imagineer" is wholly legitimised: Hollywood.

Run to the future

The two movies whose names appear again and again when designers talk about inspiration are Steven Spielberg's *Minority Report* and, latterly, Spike Jonzes' *Her*.

For many of us, 2002's *Minority Report* was a crackling sci-fi tale featuring one of Tom Cruise's greatest exhibitions of comically grim-faced on-screen sprinting.

For others, the movie presented them with a blueprint for our today. *Minority Report*'s multi-touchscreen devices, gesture control, eye tracking, e-paper and even, creepily, the core crime-prediction technology all exist now, and if you own a mobile phone or an e-reader you're probably used all but the latter (the US military isn't so keen to share that one.)

More recently, *Her* proved to be more than an adorable story of a sentient operating system (voiced by Scarlett Johansson) who allows Theodore Twombly – a wet lettuce of a human being – to fall in love with "her" before ditching him at the altar of humanity.

For UX/UI geeks, it was an

opportunity to go gooey-eyed over the serene screens that subtly puncture humanity's otherwise apparently tech-free world in the near future – and to get busy making it real.

Here's how one Spotify designer effused over *Her*'s vision:

"Tomorrow's devices should be unobtrusive… something so "you" that it dissolves into your life. The movie 'Her' is a great example of that…. Design should be more analogue, more natural feeling."

This sounds great – and you can already see (or not see) the shift in tech away from type-'n'-click interfaces to the more ethereal ones offered by Amazon's Alexa et al.

One point of concern: *Her* is not a movie about awesome UX, natty OS design, or smart AI. It's about the singularity, and humans being superseded by machines.

All those designers who rushed to make better typefaces after watching *Her* might actually have been unwittingly hastening our demise. And you thought that typeface aficionados were already insufferable.

DNA under NDA

To summarise: tech has eaten pop culture which has eaten tech which has eaten pop culture which has eaten tech all over again. And this pattern will keep happening, ever closer in sync.

So which movie might the next wave of tech change be inspired by? Worryingly, it could be a movie that suggests a future where designers have designs on… you.

Andrew Niccol's 1997 film *Gattaca* depicts a world where eugenics is the norm: where children are not only designed before birth, but also have predisposed diseases, mental illnesses, and even baldness genetically patched out of existence.

The movie wonders: what does it mean if you are an imperfect person living in a world of genetically perfect specimens? Today, when the "designer baby" is feasible, the citizens of the USA are asking themselves a similar question – because their bad genes might suddenly cost them a lot of money that they might not have.

If the Trump-led repeal of the Affordable Care Act passes, insurance companies will be able to charge people who get big, bad illnesses – the ones who cost them most money – much higher premiums. Terrifyingly, that extends to people who have a genetic predisposition to an illness – even if it hasn't manifested yet. Even if you are not "ill".

Because everything is awful now, there is worse to come. Bill HR 1313 could allow potential employers to have access to your genetic records – and if they didn't fancy the burden of an employer who might get heart disease in 15 years, they could choose not to hire you.

Surely this similarity is all a coincidence. Because for the dystopian eugenic future of *Gattaca* to have been an inspiration for US lawmakers, they'd have to be deeply unkind, troubled individuals who'd put the love of money before goodness, empathy and care for their fellow humans. So it couldn't be that.

But don't bet your life on it.

KATHRYN LAWRENCE

TWITTERATURE

"Literature is the expression of a feeling of deprivation, a recourse against a sense of something missing. But the contrary is also true: language is what makes us human. It is a recourse against the meaningless noise and silence of nature and history." – Octavio Paz

To discern how literature as an art form has been changed by technology depends on defining literature in a certain way: that it is a series of words, printed in ink on paper, meant to be read from beginning to end.

Even before the computer, as digital media scholar Janet Murray has written in *Inventing the Medium*, authors like Jorge Luis Borges were using non-linear narrative constructions to create hypertext fiction.

One online platform in particular has irrevocably changed our relationship to words, their function and form. On Twitter, the "meaningless noise and silence," can be overwhelming, but the strict restrictions have created a new literary genre; and within this new format people are telling new kinds of stories, sharing perspectives that aren't often heard through printed literature, or couldn't be expressed in a traditional format.

Twitter and the Bard

Infinite monkeys

When discussing algorithmic compositions of great works of literature it's hard to avoid the infinite monkey theorem, which is that given all of the time and space of the infinite universe, surely a countless number of monkeys randomly hitting buttons on countless typewriters would eventually produce the complete works of William Shakespeare.

To update the infinite monkey theorem, one can easily imagine those countless monkeys on smartphones instead of typewriters, posting to Twitter.

In fact, there is an @Infinite_ Chimp, but it's the name of an urban winery that, according to their website, sells gourmet wine in a can.

And there is a Twitter account set up for the express purpose of finding the complete works of Shakespeare amongst the Tweet stream. @CompleteTweets was created as a collaboration between the Globe theater in London and Twitter in 2016. According to The Verge, they hooked up a typewriter sitting in the Globe's lobby to an algorithm that searched Twitter word by word to type out all of Shakespeare's 37 plays and 154 sonnets in order.

On December 6, 2016, it tweeted the final line of Hamlet,

> **The rest is silence.**

Iambs are back

@Pentametron is a Twitter bot that was created by Ranjit Bhatnagar, a Brooklyn-based artist who works with interactive and sound installations, scanner photography, and internet-based collaborative art.

It finds tweets that are written in perfect iambic pentameter, which for those who haven't brushed up their Shakespeare recently is a line of verse with five sets of iambs (pairs or triplets of stressed or unstressed syllables).

Joined in March of 2012, the Pentametron continues to retweet unwittingly iambic pentametric phrases, from the mundane: "at least the yankees doing something right" to the philosophistic: "the empty vessels make the greatest sound."

Over time, Pentametron has collected so many lines of iambs that they were enough to compose a 252-page "novel" entitled *"i got a alligator for a pet!"*. While the length of the debut novel by the bot is impressive, its shorter literary works such as "song of the year okay okay okay" are more unexpectedly touching:

It's been a year, and nothing is the same.
I kinda lost myself along the way.
We want the money middle finger fame!
song of the year okay okay okay

I have eaten the baby shoes

Because of the creativity it requires to work within the constraints of the Twitter format as a writer, it has a sort of strange love affair with literature.

There are several literary references that regularly circulate as meme formats on Twitter, the two most notable being William Carlos Williams' poem *"This Is Just To Say,"* and Ernest Hemingway's (debatably attributed) "baby shoes" story.

There is even a @JustToSayBot that creates new versions of the poem following the formula "I have eaten the (plural noun) that were in the (noun) Forgive me They were (adjective) so (adjective) and so (adjective)."

Both this poem and the "baby shoes" story are often used as an example of how evocative brevity can be in English literature classes, and have become something of an inside joke on Twitter as a reference to the platform's restrictive format.

One writer has gone so far as to acquire the handle @babyshoes and assure it will never be used, telling the famous story through the absence of tweets.

Shorter, sweeter

Acknowledging the creativity that can come out of the limitation of writing in 140 characters and the use of the Twitter feed itself as a source of inspiration, Twitter sponsored a fiction festival in 2009, which took place annually ending in 2015 (according to the lifespan of its official Twitter account).

During these festivals, well-known authors would try to write an entire novel in a Tweet. The Guardian collected some of their best examples from 2012, including this by novelist Hari Kunzru:

> I'm here w/ Disk. Where ru? Mall too crowded to see. I don't feel safe. What do you mean you didn't send any text? Those aren't your guys?

Microblogging fiction, as defined by its unverified and multiple-issue carrying Wikipedia page, is "a fictional work or novel written and distributed in small parts, defined by the system it is published within."

While few believe that most of Twitter's content is intentional or unintentional literary genius, Melissa Terras, a professor of Digital Humanities from London, has compared criticism of Twitter literature (or Twitterature) to resistance to any other new literary medium.

"In the Victorian era, critics were aghast when production press technology became more advanced and allowed authors to write longer novels. 'You had all these critics saying, "The books are too long, they're awful"'" — via Quartz, *"Authors are turning Twitter into a literary genre, 140 characters at a time"*

Matt Stewart, author of a book on the French Revolution, released it in a series of 3,700 Tweets in 2009, and claims to be the first to publish a book through Tweets. However, Japanese "cellphone novels," or "keitai shousetsu," told through text messages, are arguably the first iteration of the form, and have been best-sellers since the early 2000s.

In 2010, Chinese author Zhong Xiaoyong (pen name Lian Yue) tweeted his novel "2020," using the platform to also make a statement about online censorship in China.

Many authors use the structure of the platform in creative ways, not simply posting the text of their stories but also making accounts for characters that interact, link to external web pages, and take full advantage of the hypertext format by constructing something similar to an alternate reality game.

For one example, as part of the Twitter fiction festival in 2014, Elliott Holt told a story on Twitter through retweets from characters who witness a murder at a party and Tweet about it, and whose Tweets are later used as part of the investigation.

Another notable example is Jennifer Eagen's "Black Box," released as a Tweet stream by The New Yorker in 2012. It works well broken up into short chunks because the story is comprised of the internal narrative of a female secret agent in a future where cartilage-embedded recording devices, cameras activated by tear ducts, mind-reading activity logging, and other technologies that have turned her body into a weapon are commonplace — as are ordinary people being outfitted with these technologies and deployed against foreign powers.

Even the publishing formats of long-form Tweets have changed since 2014, and savvy Twitter users today now thread their Tweet screeds into a readable order in the form of replies to the original tweet. What was once seen as a highly experimental use of the platform has now been codified and made more legible by conventions agreed upon by mass use.

The reality of Twitter is stranger than fiction

Maybe it's another side effect of the normalization of microblog fiction as a literary genre that Twitter no longer runs its annual competition.

This could be because the reality of Twitter is stranger than fiction, the combination of telepathy and Tourette's syndrome that somehow compels us to shout our deepest thoughts and feelings into the void, and constantly be reading and receiving those thoughts from people we may never come in physical contact with.

Or perhaps Twitter literature isn't disappearing, and there's actually more fiction on Twitter than ever. As the line between reality and fiction become increasingly blurred on social media, we are all the authors of a certain kind of Twitterature, telling the stories of our lives 280 characters at a time.

COPYING DATA...
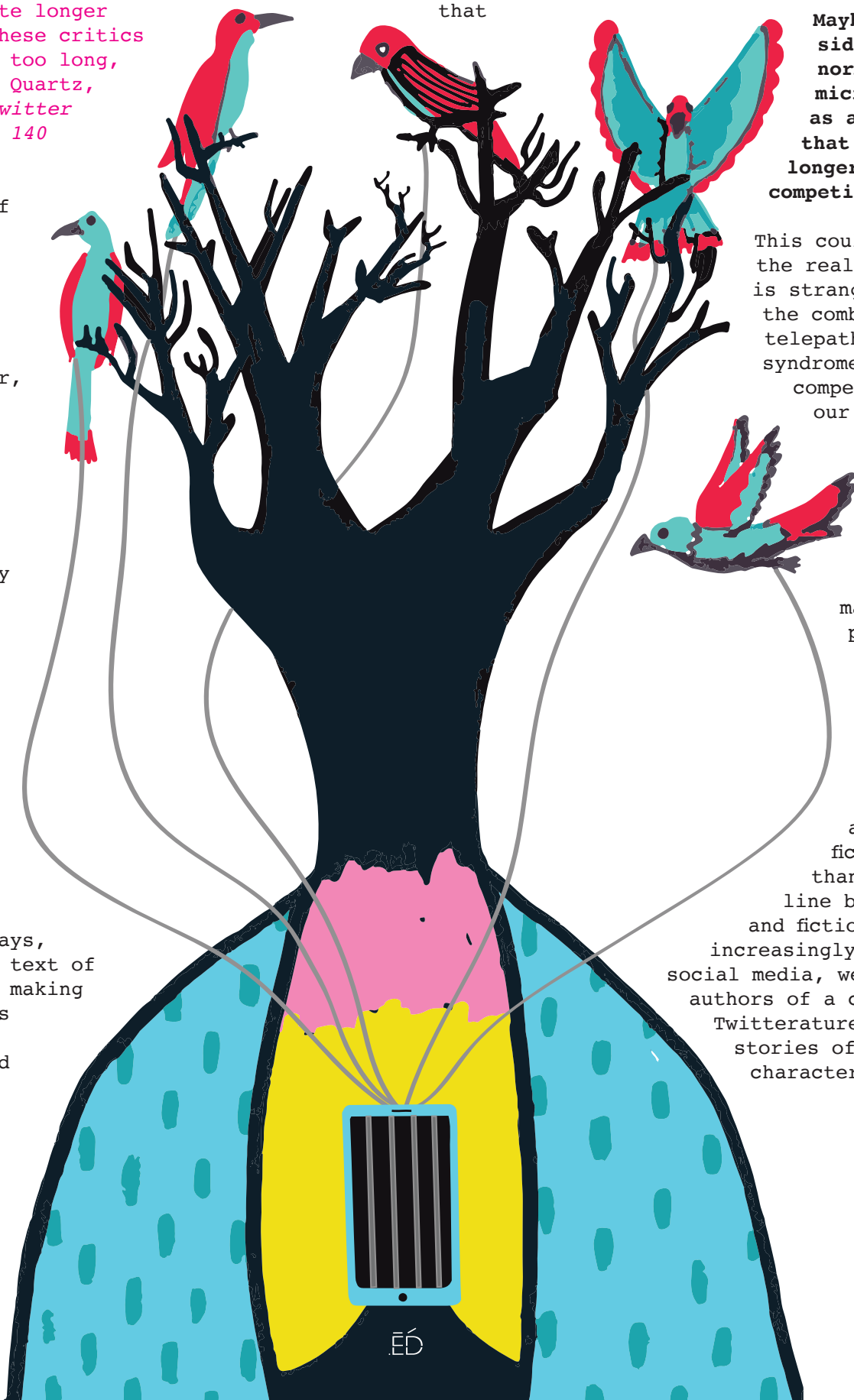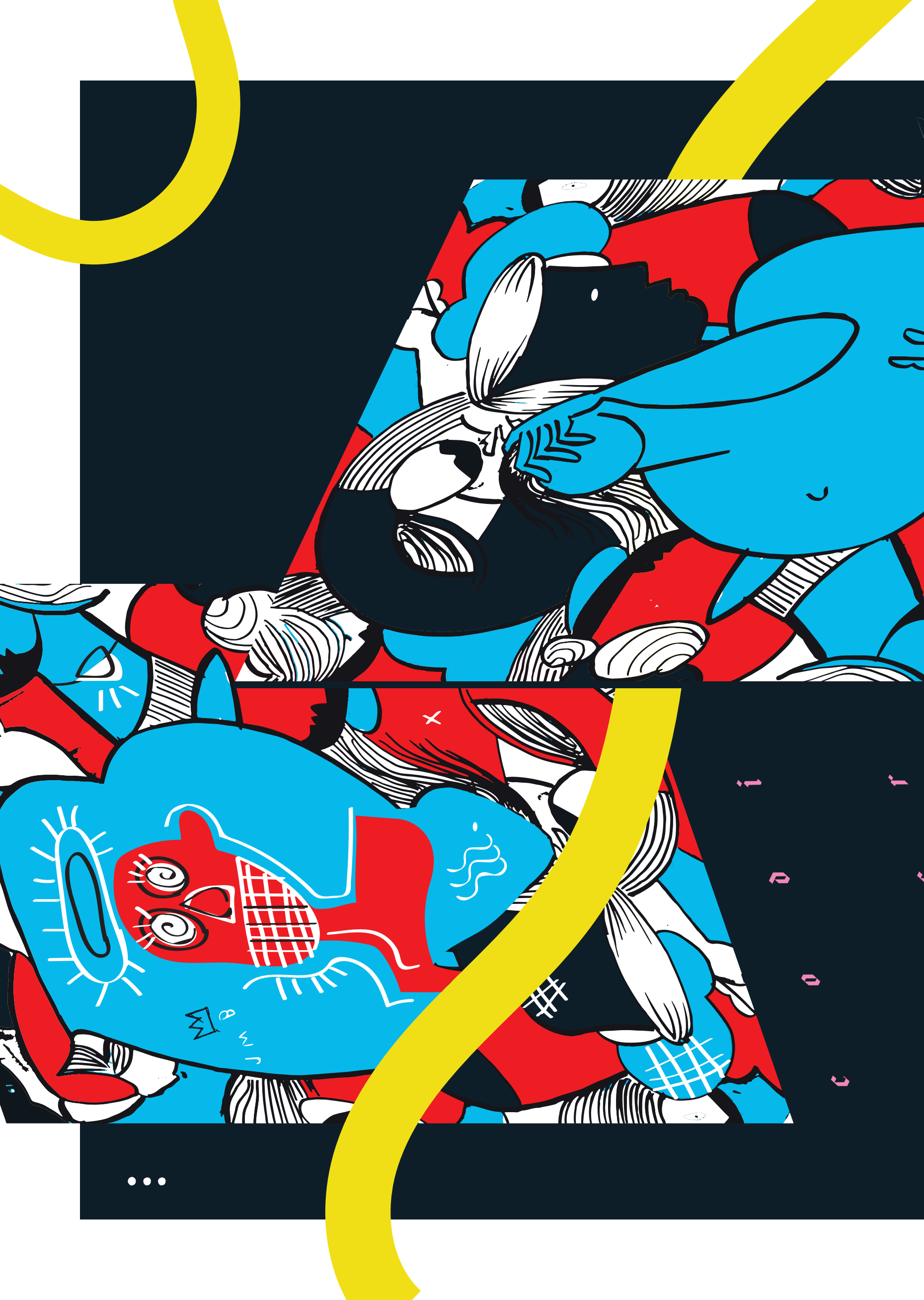
AUTOMATIC FOR THE PEOPLE: WHY MUSICIANS SHOULD WELCOME AUTOMATED MUSIC-MAKING

I need you more than want you, and I want you for all time

Friedrich Nietzsche famously said, "without music, life would be a mistake." He was also a huge fan of opium and self-prescribed himself the sedative chloral hydrate, so maybe we should be wary of what he constitutes a "mistake."

Either way, music is an essential, very human form of expression, bringing joy in a way that can't be felt through words alone.

A beautiful song like "Wichita Lineman" by the recently departed Glen Campbell connects to virtually anyone on an emotional level – and yet conjures unique feelings in every listener.

For an activity we've been doing since people could bang one thing against another thing, the whole "humans making music" process seems to be working out just fine – except now, some people are trying to take the people out of the process. But why?

C.R.E.A.M.

The TL;DR answer to the question "why are we headed for a future where my music is made by AI?" hovers somewhere between "lust for cash" and "the human desperation to innovate."

The way tech will change music can broadly be cleaved into two paradigms: music that will be made without any human input whatsoever, and music that is made by humans – but in a way which means handing off work to bots.

Neither of these options will fill musicians with anything other than existential dread. But it also might work out a lot better than they'd assume.

Automatic For The People

Music is, by definition, compiled using a limited number of notes, chords and melodies, and thus is ripe for automation. It's made of the kind of patterns that computers find simple to analyse and replicate.

So AI-produced music will suck, right?

The short answer is no. The longer answer is also no, and – surprise! – you're already listening to it. And it's great.

Brian Eno is considered one of modern music's wizards. A founding member of Roxy Music, he soon quit the band to invent his own type of music: Ambient – the warm, languid, slow music that is "as ignorable as it is interesting."

It's the type of music you could hear at airports, as the title of one of his pioneering LPs, *Music For Airports*, is at pains to point out.

Eno has been producing music that makes itself for decades. Generative music involves presenting a computer with a set of sounds and some loose parameters – and letting it create the music it concludes works best.

Recently, Brian released *Reflection*, an album that was released as an app that created the music anew each time it was launched: whenever you played it, it felt sonically familiar without actually being the same.

(And even if you listen to it on a streaming service, you will experience an element of its mutation: every few months Eno quietly uploads a different version of Reflection to a slightly confused – or impassive – audience.)

Reflection is a great album that challenges what an album – and music itself – is. In some ways this is nothing new – before recorded music existed, a song was always different every time you heard it.

But that's Brian Eno. He produced a bunch of Bowie, U2, and Coldplay albums, and is considered a genius. What about the bedroom artists, or the rest of us music lovers?

B-Boy Bouillabaisse

Music that makes itself is not a threat to music. It might be a threat to the livelihood of the people that make it, but that's the same issue that we'll all be facing soon.

Instead, what are the ways music makers will be liberated, supercharged and energised by automation?

Rewind to 1989. It's a sunny day in Los Angeles, and you're on the roof of the Capitol Records building. There's a weird new music playing that sounds like someone took little bits from a hundred classic soul and funk and rock and hip hop records and jigsawed them all together.

You'd be right to think that, 'cos you're drunk and you're at at the launch party of the Beastie Boys' revolutionary *Paul's Boutique* LP: an album that was, indeed, made from all those bits of records (and more). Here's the interesting part: a record like Paul's Boutique will never be made again.

The reason that it's one-of-a-kind will frustrate anyone who's listened to the album and been struck by the dazzling scope, audacity (who'd have the guts to shuffle a collage of bits of Beatles songs into a new song?) and funkiness of the ultimate cut-n-paste record.

It's because the band and their visionary producers, the Dust Brothers, broke the law. They grabbed all the best bits of all the records that they liked the best and, out of the parts, made one that was better. And they didn't pay for all of these parts.

You can't do this any more: copyright laws in the music industry have been tightened with industrial-strength monkey wrenches. Using a snippet of another song in your own costs so much money that it rarely makes financial sense.

In fact, it's often financial insanity: the famous strings in The Verve's *Bittersweet Symphony* is a sample of an orchestral cover of a Rolling Stones song, and as a result, the Verve had to pay every penny the song earned to Mick 'n' Keef.

What Can You Do For Me?

Wait, but what's this got to do with automation? Two very important things.

Firstly, *Paul's Boutique* was a turning point: when the musician openly evolved from being a writer of music to being a curator of sounds, noises and snippets.

Again, remember that *everything is a remix now* – and it probably has Nicki Minaj doing a guest verse on it, too.

Secondly, and conversely: this cut 'n' paste method of making music is normal now.

Open Garageband and you'll see that making music involves nudging around virtual lego bricks: this drum beat here, this horn stab there, and this loop of a jazz-flute gasping over the top of it all.

It's long been common for composers to buy "packs" of samples, made for you to cut up, move around and make new songs from. So what if a computer made them for you instead?

OK Computer

It takes half a dozen clicks to create a brand-new, never-before-heard song on Jukedeck, a service that uses AI to create brand new musical compositions.

Jukedeck is simple:
fill in a few meaningful parameters (you can choose the "Corporate Tech" genre if you're a masochist), decide on some tonal distinctions – and out pops a song that you can stream, download, or buy outright – making you the actual owner of the composition.

This is great for podcasters who just want a piece of catchy music for their show, and can't afford to hire a songwriter, or make it themselves.

For instance: MONTAG's companion podcast, The MONTAGE, uses a
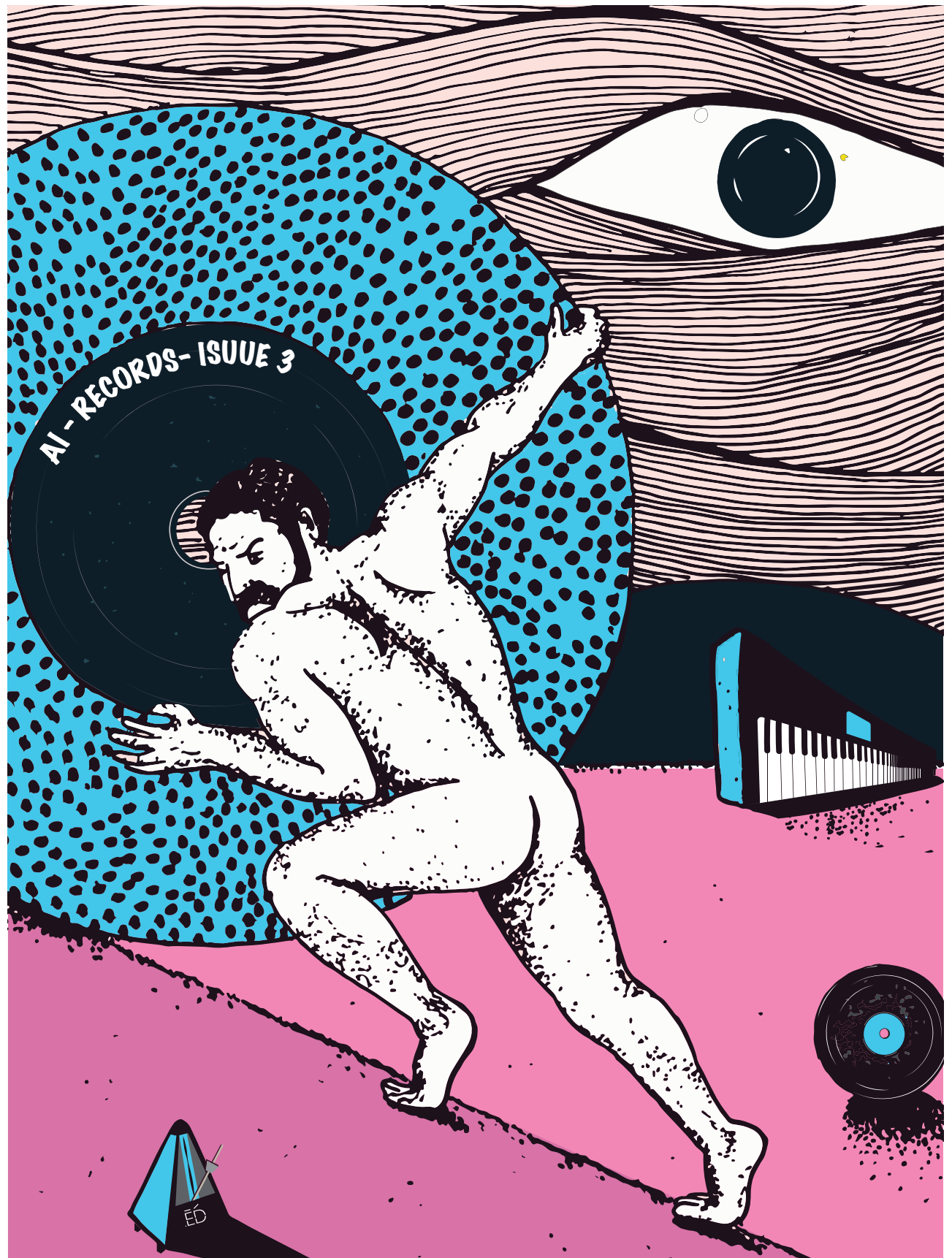
"Cinematic Sci-Fi" song that we made on Jukedeck called *Reckless Doubts* (a suspiciously fitting name for any of MONTAG's activities).

Is This It?

Ho-hum, you might think: this isn't real music. And you know – maybe it isn't. Yet this is the very crux of tomorrow's human music-making paradigm. Because here's where the much-maligned human producer is creatively supercharged: why not use Jukedeck, or tomorrow's more advanced version of it, to make 20 tracks, sample the best bits, and

make something human, unique and utterly new from the fragments? Maybe you'd realise that automated music creation is not to be feared. You might even end up making *Paul's Boutique 2.0* – the most "now", most cutting-edge thing you could possibly do in pop music today.

Or at least, that's what your breathless press release will say when you're Bieber-famous thanks to AI.

TODAY'S DYSTOPIA: EQUILIBRIUM

In MONTAG's Today's Dystopia series, we compare fictional futures with the world of today. How far are we from the futures we are afraid of? Kathryn Lawrence casts a perplexed eye over the unintentionally comic sci-fi flop Equilibrium...

The city of Libra presented in the 2002 movie *Equilibrium* ticks off all the boxes for a fictional dystopia:

- Totalitarian government with a patriarchal figurehead whose face appears on giant screens in every public place spewing propaganda? **Check.**

- Population reduced to mindless drones because of mass-produced and mandatorily dosed emotion-stifling drugs? **Check.**

- Art, literature, and anything that evokes sensual pleasure made illegal and burned by squads of faceless militarized police with flamethrowers? **Check.**

If the post-World-War-III architecture looks familiar, it's because much of the film was shot in Berlin, and the film also aesthetically evokes German fascism quite heavy-handedly with the government's flags and uniforms.

A more stereotypical dystopia has yet to be committed to film, and the central point of contention (that art and human emotion can and should depose authoritarian regimes) is one that has been visited in many, many other works of science fiction, including but not limited to *1984*, *Farenheit 451*, and *Brave New World*. Rotten Tomatoes' Critics Consensus states the obvious: "Equilibrium is a reheated mishmash of other sci-fi movies."

And yet, *Equilibrium* is still enjoyable in its obviousness. Released shortly after *The Matrix*, its highly stylized fight scenes, including the protagonist storming the capitol as a one-man coup, are still fun to watch, if you don't cringe at glorified gun violence.

The symbols of art and humanity that Christian Bale's hard-boiled cop grows attached to as he stops taking the drug and joins the resistance are actually quite beautiful in their simplicity: a rainbow, a puppy, a children's book, a woman's red hair ribbon. At one point a tiny, ornate bottle of amber perfume forms a pleasantly subtle visual opposition to the yellow injectable vials of Prozium II, the desensitizing drug.

The dichotomy between the oppressive government's faceless, grey uniformed and leather-clad militarized police, and the rebel art appreciators (called "Sense Offenders") who all have colorful clothing, long hair, and soulful eyes, could lull the audience into a false sense of security: of course our world is nothing like this! But there are some facets of the future technology and society that may be closer to ours than we think.

We're rating the art, the tech, and the government of this dystopia's resemblance to today on a scale of 1 to 5 guns (🔫), because *Equilibrium* is, at its core, an action movie whose most memorable quality is the "gun kata," a made up martial art that basically looks like tai chi, but with guns. Let's begin!

The Art: 5 out of 5 guns
🔫 🔫 🔫 🔫 🔫

The film opens with a police raid on a group of people sitting around in a decrepit salon full of oil paintings quietly flipping through books, listening to records, and drinking wine. After Christian Bale's enforcement squad guns all of them down, they uncover a cache of art underneath the floorboards and the first piece to get torched is none other than the Mona Lisa.

Shortly after, Bale's partner is the first to stop taking his Prozium II, and is caught with a smuggled book of Yeats poems. In a later scene, when Bale has also stopped taking the drug and finds another stash of illegal art, he plays a record of Beethoven's Symphony No. 9, and is moved to tears.

All of these are instantly recognizable as Art with a capital A. But what's cool about the film's definition of dangerous art is that it's not only capital-A Art, famous works that would be featured in textbooks or institutions, that is banned and destroyed. Disco balls, decorative glass jars, kinetic sculpture, kitsch, novelty furniture, street signs, appliances, vintage pinup posters, children's books, and snow globes are also included. Anything that stirs feelings or has any emotional resonance is considered dangerous, and that's actually a pretty neat definition of art.

Somehow, despite the constant government surveillance and ubiquity of machine-gun-toting police, it is possible to smuggle large quantities of contraband, and an entire underground city of rebels is thriving. There is a seemingly endless supply of Sense Offenders for the police force to annihilate in dramatic raids.

The trope of ineffective totalitarianism is ludicrous enough that the existence of the rebels and the entire art smuggling situation deserve 0 out of 5 guns for plausibility. But the art itself is real, and the film gets a 5 out of 5 guns for embracing the art in the aesthetics of the everyday.

The Tech: 2 out of 5 guns
🔫 🔫

A fan site quotes writer and directer Kurt Wimmer on the tech in the film:

"I wanted to create more of an alternate reality than get caught up in the gadgetry of science fiction... In fact, there's no technology in EQUILIBRIUM that doesn't already exist."

It is true that the technology of the film isn't too different from today's, but the noticeable things that have and have not changed are simply not believable enough to get a high score.

The most noticeable futuristic technology is the drug delivery system. Every citizen of Libra is required to carry a small gun around with them that takes cartridges of liquid Prozium II and injects it into their neck.

First of all, relying on each citizen to voluntarily shoot up several times a day doesn't seem like the most effective form of control. Why not put the drug in their drinking water, or distribute it through the air somehow?

Second, there is a noticeable lack of gaping neck wounds. Unless there was some kind of skin grafting or cauterizing technology included in the gun, injecting the same spot several times a day would at best leave a mark, and at worst look like everyone had a bad case of vampire bites.

While there is no shortage of massive screens for the Huge Holographic Head of the government's overlord to preach from, and tablet computers or foldable touch screen interfaces are also used several times in the film, digital record keeping is simply unheard of.

In several scenes, Bale calls up audio or video recordings of things that have just transpired, so there should be some kind of digitized and centralized government surveillance archive, which makes sense for a future dystopia. But when he goes to the archives to see if an illegal piece of art has been placed in storage or destroyed, the record keeper is using a massive book on a pedestal.

Other pieces of weirdly anachronistic tech include the zeppelins present in every establishing shot of the city, and the strange two-faced analog watch that at least two of the law enforcement agents wear which tells them when to take their next Prozium II

dose. While it is kind of stylish (and you can buy it online for $115), it's also kind of useless.

Because the tech in the film isn't much of a stretch from today's it gets 2 guns, but misses a higher score because the tech that it does have doesn't make a lot of sense.

The Government: 1.5 out of 5 guns

The name of the Tetragrammaton Council is never explained, and we meet only one Council member during the film: Vice-Counsel DuPont. A figurehead known only as

"Father" is the one whose face is broadcast all over the city, and (spoiler alert) it turns out that this Father figure is nothing but a

projection, and DuPont is the one behind it all.

Maybe there's no Council at all, but one has to wonder why a completely drugged and subdued population would necessitate any attempted performance of democracy. Regardless of this small plot hole (and the larger note of incompetence covered in the analysis of art), there are two smart things about the presentation of the government in this dystopia.

First, the name DuPont can't be a

coincidence. DuPont, the over 200-year-old chemical manufacturing conglomerate, is one of the top ten largest chemical companies in the world based on market capitalization and revenue. Artificial materials are the building blocks of dystopia, so who better than the inventors of Styrofoam, Lucite, Teflon, Neoprene, and Kevlar, to assist in world domination.

"Better Things For Better Living... Through Chemistry," the DuPont motto from 1935 - 1982, is already a perfect dystopian slogan.

In 2001, DuPont sold a lot of their pharmaceutical business to global pharma company Bristol-Myers Squibb (BMS). Peter Dolan, the former chief executive of BMS, commented at the time of the deal that one of the products currently in research and development was "a novel agent for treating depression and anxiety." This was also the same year that the manufacturers of Prozac lost its patent.

In the alternate universe of the film, maybe Prozium II is a super-Prozac created by DuPont early in the 21st century, and they effectively overtake governmental control after striking a deal with the government to mandate distribution of the drug after World War III. Stranger things have happened in science fiction than the collusion of governments and pharmaceutical companies.

The second realistic part of the totalitarian government is its computer-generated figurehead. Much

has been written about emerging technologies that allow for the digital manipulation of a politician's face.

The 2016 paper "Face2Face: Real-time Face Capture and Reenactment of RGB Videos", a collaboration between scholars from the University of Erlangen-Nuremberg, Max Planck Institute for Informatics, and Stanford University, demonstrates how advanced the technology has already become in a short video where they demonstrate manipulating the faces of George W. Bush, Vladimir Putin, and Donald Trump.

When the protagonist has managed to assassinate everyone in the government and clear the path for the revolution to begin, the first thing he does to begin the liberation of the city is to enter a control room where lackeys sit at computer terminals creating the propaganda projections all over the city. By shooting the computer monitors, another great trope, and because the only way for anyone to solve any problem in this film is with a gun, he shuts down the propaganda machine and begins to free the people from their stupor.

The fact that the technology to make this kind of holographic figurehead is actually possible today gets the government in *Equilibrium* one gun out of five. The second gun comes from the DuPont connection, but only half, because it's very unclear whether Wimmer has intended for this to be as deep as we think it could be.

Overall: 2.8 out of 5 guns

It would have been easy for Equilibrium to pose the question of whether it's actually worth the elimination of all war to deny everyone of love, art, and emotion. This grey area is never explored. Government = Bad, Art = Good.

And admittedly, the average for this film is skewed very high because of the art rating.

But let's consider for a moment the original description of the film, as a "mishmash of other sci-fi movies." Doesn't it seem likely that our future wouldn't resemble a single work, but an amalgamation of fictional dystopias?

We are rightfully afraid of fascism, and of losing our bodily autonomy to chemical and psychological warfare. We want to be on the side of art and love. As the sole female in the film says, "Without love, breath is just a clock ticking."

If the future is at all predictable, let's hope that the citizens of tomorrow's dystopia fight for love, for rainbows, for puppies and for dangerous kitsch. In fact, why not start that fight today?

IT'S ALL ABOUT MEME: WILL THE "POOR ARTIST" BECOME A THING OF THE PAST?

Being an artist, on the whole, sucks.

Oh, don't get me wrong, it's exciting too. Turning to face the wide open plains of their imagination, The Artist boldly strolls towards the horizon of their creative tundra, pausing only to whet the thirst of curiosity along the way. Through *praxis*, they discover a new way to look at the world: their way. It's beautiful. It's unique. It's *them*.

The Artist emerges, invigorated, and eagerly shares it with the world. And the world... doesn't give a shit.

And not only does it not give a shit, when it does, artists don't get paid.

Sadly, that's the story for many artists, and the discrepancy is odd. We all agree that art has terrific value – paying for Netflix is no burden – except when we don't. Oddly, we skew towards rewarding major practitioners over small ones.

Forget Kanye's $600-for-a-pair of-sweatpants fashion line. Forget Damien Hirst and his allegedly-ironic £1M diamond-encrusted skull. These are the 1%. Everyone else struggles.

There needs to be a new way for creators to get their credit where it's due. The problem is that the world doesn't want to do that any more.

Learn to accept your reward

Just like every other industry, the arts celebrates the achievements of the few and pours money and attention onto them, whilst leaving the rest to wonder what separates them from the riches.

The 99% almost always produces something people want. The frustrating part is that while the consumer's life is enriched by the existence of that art, somewhere along the way the reward for their work fizzles out and never quite reaches the artist. It's one of the sad unifying experiences for any creator in any niche.

Hang your head, because we all helped create this nefarious disconnect. Ever downloaded music that you've not paid for? Ever found an image online you liked and used it as your Facebook header? Googled for a hooky PDF of a trashy poolside thriller? Yeah, me too.

And these are just the obvious and lightweight examples of our behaviour widening the gap between creator and payment: have you ever paused to wonder who gets paid for the songs you stream for free on Youtube, and how much they get? (SPOILER: it's about, erm, $0.0000616 per stream.)

What about the pictures you linger over and bookmark on Pinterest? What about the hot-take blog posts you read to while away your time on the toilet?

But don't feel bad. It's not anyone's fault that the creators rarely get rewarded: *it's the system, man.* And that system is about to change.

What is the system and how is it broken?

The system has been, for a long time, broadly along these lines: people make nice things, a few of these people become successful, this success breeds more success; repeat to fade. Meanwhile, the rest scratch around for the scraps of success.

This "success," note, is not by any means just about money. It could be a thousand different varieties of reward; but mainly, it's about public recognition. (OK, *and* money.)

Recognition is the bottom line for creators: it can be something as simple as attribution, because public recognition is the cultural currency that eventually becomes actual currency. And recognition changes in monetary value as the participants grow in stature.

Here's one example of the thought process around recognition, in full:

- If you're running a small blog sharing my cool designs, use my pictures for free and recognise me by explaining that I made it.
- If you're a major fashion brand and are using my drawings (or something *very much like them*) on your handbags, recognise me with a big ol' slice of that money you're making off the back of them.

And here's where the system breaks down. The internet is wild, huge and fractured, and finding where your work is being used is akin to searching for a needle in a haystack, inside a universe made of haystacks. On acid.

So the chances are that your artwork is being used in all sorts of ways – some innocent and some not – and most give you no recognition, let alone money.

And here's where the blockchain gallops into the picture, cresting the horizon of creativity, and promising, as it does to every industry, revolution.

Blocking creativity

The important thing about the blockchain is that no-one really knows how it all works. Some people know parts of it really well, and *sort of* how that fits into the rest. Feel free to bluff as much as you like about the blockchain, because that's what everyone else is doing.

But the miracle of blockchain tech – and especially varieties like Ethereum – is that not only can your work and attribution to you be recorded on a distributed public ledger, but also "smart contracts" can be created.

It means that artists can make art, then set parameters for who can use it, where, and how much they get paid.

Companies like the Berlin-based Ascribe.io offer a way to make sure your work has a digital name-plate beneath attached to it at all times.

You can also specify how it's used and in what context: maybe a charity can use your poetry gratis, but if Pepsi wanted to put your poem on a soda can (bear with me, we can live in hope), they'd need to cough up serious moolah.

Blockchain tech also allows artwork to become limited editions, and identification of use can be enforced.

This is a powerful tool: suddenly, musicians can set a few parameters, and their songs can be used wherever they choose – in TV ads, movies, YouTube videos, fashion shows, cafes, etc – and they can be paid immediately, and in proportion to the use of it.

This version of the future is highly attractive and feels morally correct: your creative rights are not only assured, they're rewarded. No one can use your work without your say-so. How could that possibly be a bad thing?

The Distracted Boyfriend Problem

The counterargument to a new, everything-attributed-everywhere system is a meme of endless meme-ability: The Distracted Boyfriend. You know it. You probably made your own meme with it.

Like all true memes, it began life as a creative artefact, and then has been remixed over and over – like photocopies of photocopies – until it has become a cultural artefact, with a whole new meaning.

It was created and titled with the agonising obviousness of all stock

photos ("Disloyal Man Walking With His Girlfriend And Looking Amazed at Another Seductive Girl") by photographer Antonio Guillem. And then it became Meme-Famous.

Post-mememageddon, Antonio feels sore: maybe because everyone is sniggering at his creation, but mainly because his image is now one of the most recognisable in the world – and he's not getting a penny from it.

Antonio is vaguely threatening to get the money he's owed – by, I dunno, suing the internet? – for the widespread, unpaid use of his unintentionally hilarious photo. And this is where that brilliant enforceable attribution system could be used by mean-spirited or money-obsessed types to put the brakes on creativity.

"Dank memes" bring levity to dark times, after all, and if enforced payment – even just a one-off crypto-currency micro-transaction – meant that our dearest, dankest memes were extinguished before birth, then we'd lose a tiny bit of joy from our lives.

Of course, smart contracts within any blockchain system could easily have a free-to-use "Meme Clause" to prevent a dystopian Death Of Memes.

But bringing order to chaos might destroy the charm of the meme, or at least cause a de-dankification process from which our favourite gifs may never recover. A balance between meme-freedom and enforceable attribution could be the art-blockchain's acid test.

Open everything, restrict nothing

Today, everything can be copied, often free from reprisal. Some people argue that, for the benefit of creativity, this should be the default setting.
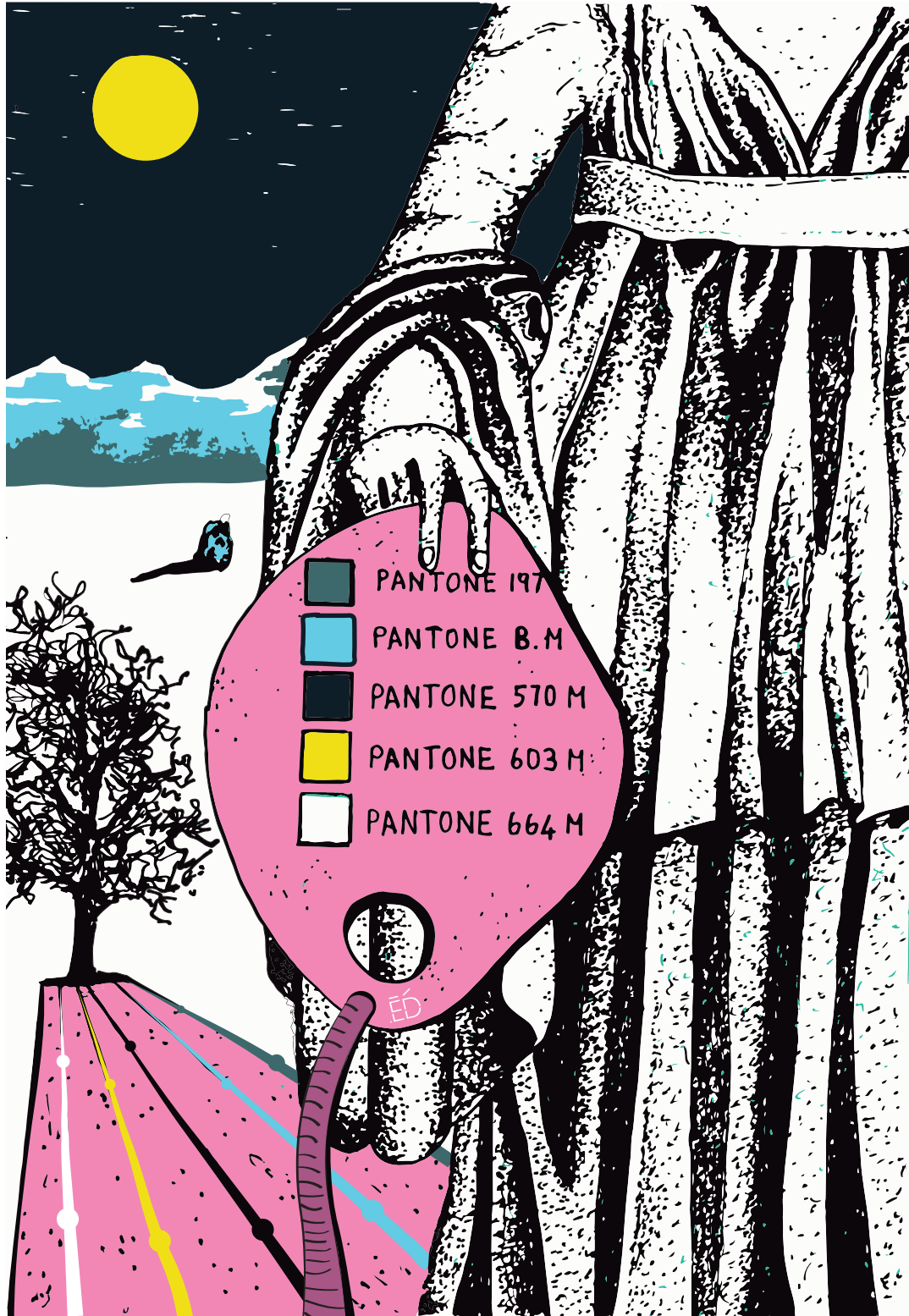
Chinese IP laws are thought to be famously non-existent. Actually, they are tightening fast but it's not a massive stretch to assume that

copyright laws have been regularly flaunted in China – and we've benefited. Talent imitates, genius steals. In that case, China is the genius that now leads the world in creativity. In the industrial heartland of Shenzen, the flaunting of IP law has, some argue, accelerated creativity for the benefit of humankind.

This process is also driven memetically. Chinese hacker, maker and open-source enthusiast David Li argues that the freedom to "remix" something

that someone else has made is more valuable than the restrictions that copyright provides. This free-remixing process is known as Shanzai.

Let's imagine a US-based company designs a cutting-edge drone and builds it in China. Shanzai practitioners would quickly explore how the drone was built and seek ways not to copy it, but

to evolve it: make it cheaper, faster, lighter, tailored to niche markets. They might even use the factories on their doorstep to beat the "real" product to market. The result is a drone that is, for most people, "better" that the original.

In the best case scenario, the beneficiary here is the 99% (the purchasers, who get a better drone), not the 1% (the original creators, who get much less money).

It's not fair. But the majority, as we have often seen in a series of recent political events, has a habit of getting its own way.

Me, me, me

Defending memes as an argument for radically changing how artists make a living might be one of the first signs of madness. But a world where doubt is cast over the ability to take a thing, tweak it and share it – for fun, for the sake of innovation, or just for the sheer hell of it – might not be one we want to live in.

But wait. Shouldn't creators be rewarded, every time, without exception? Here's that conflict again: humans love to make new things, and humans like to get those new things for as close to no money as possible.

Technology now means that the ability to remix, re-create, re-think and re-form is not only fun, but possibly the future of creativity itself. Maybe the act of creativity and the reward for doing it has quietly changed.

We're at a pivotal point where we might be able have our cake and eat it. Imagine a world where remixers are allowed to take things apart and make something new, yet the blockchain means that original creators get reward – and the human race gets a little bit richer in a different way each time.

It sounds like a good compromise for the benefit of everyone, not just that gilded 1%. Oh, and we get to keep our sweet, sweet memes.

PANTONE 197
PANTONE B.M
PANTONE 570 M
PANTONE 603 M
PANTONE 664 M

VIDEO GAMES AND ART, ENTWINED

Video games are art

The statement "video games are art" has been hotly debated for at least the last seven years. In 2010, Roger Ebert (yes, film critic Roger Ebert, who won a Pulitzer prize) famously wrote a screed arguing that "video games can never be art".

Ebert believes "No one in or out of the field has ever been able to cite a game worthy of comparison with the great poets, filmmakers, novelists... painters, composers, and so on."

Part of his essay was in response to a TEDX talk by game creator Kelly Santiago, who argues that video games should be considered art and uses examples of games like Flower, which was inducted into the Smithsonian American Art Museum in 2013.

But are video games only art if they *extremely Indiana Jones voice* belong in a museum? Of course not! Art is for everybody.

Twine games provide a platform for people to make games who don't have game development companies behind them, may not be able to write a single line of code, but can still create beautiful, immersive, moving experiences that we can argue are worthy of comparison with works of art (sorry, Ebert).

The accessibility of these tools and the increased visibility of indie games on platforms such as itch.io have been huge for democratizing the art of video games for creators and players. Let's explore some titles, bask in the beauty of the genre, and maybe even find something to play next.

Twine after twine

Originally created by Chris Klimasin in 2009, Twine calls itself "an open-source tool for telling interactive, nonlinear stories."

Twine games use the technology of the browser (HTML, CSS, and JavaScript) and take advantage of the games' clickability to let the player work their way into and through the world they create.

Unlike earlier text-based games like MUDs (Multi-User Dungeons – simple multiplayer virtual worlds), Twines can include illustrations, embedded videos, often have soundtracks, and are usually played solo. However, there are many (like Mighty Owlbear's *The Road To Adventure*) that draw on the language of these early games, using directions like "Go North. Go South." to explore.

They're games made by and for people who love games and are familiar with tropes from MUDs, RPGs, JRPGs, survival games, and visual novels, as well as pop cultural influences that aren't reflected often in games (such as *Crystal Warrior Ke$ha*, the story of an epic magical battle fought by the pop singer).

Mechanics-wise, you are always clicking on hyperlinks to advance through the story. Sleep is used as a narrative device in many text-based games, which take place over the course of days or weeks, and you may have to return to a certain page to do this. Once you find whatever action, like sleeping or exploring, moves the story forward, it's tempting to race through these games, but you'll find that actions taken will often have an effect on the outcome of the story and that Twine stories almost always have multiple endings.

It's unclear if B.J. Best's *Unofficial Sea-Monkey(R) Simulation* was actually built on Twine, but it's a great example. It opens with the Don DeLillo quote: "All plots tend to move deathward," and uses a chronological mechanic of interacting with your sea monkey colony every day to tell a story of child in a less than ideal home situation, with eight possible endings.

The genre and contents of games on Twine are diverse, but more often than not they explore personal problems and themes that aren't touched upon in mainstream games, art, or literature. The authors of Twine games are generally people whose stories aren't told at all through traditional media: gender non-conforming artists, minorities, and people telling stories from a neurodivergent perspective. They also often have content warnings for themes like abuse, assault, self harm, and substance abuse.

One of the most well-known games created with Twine is Zoë Quinn's *Depression Quest*. The game illustrates the struggle of performing everyday tasks with depression and "aims to show other sufferers of depression that they are not alone in their feelings, and to illustrate to people who may not understand the illness the depths of what it can do to people." It's one of the most well-known examples in the genre of empathy games, which let you embody someone else's experience through the gameplay.

In the realm of indie games, the authors are often acknowledging their struggles with their own bodies and minds, and how they've used others' games and outlets in art and media to cope. In *SABBAT: DIRECTOR'S KVT*, developer ohnoproblems' extended version of the game *SABBAT*, they ask straight up:

"have you ever gotten sick of your dumb human body and depressing future prospects? why not play through a twine story in which you can coat your body in charged animal essences and enact satanic rituals to gain weird demonic body parts and terrible power?"

The answer to which is, "Yes, of course I am sick of my dumb human body, and virtually amassing demonic power through Satanic rituals sounds like a very fun way to spend an evening."

As you may have guessed by now, there are also many games that cater to more unusual sexual proclivities. A popular vore-themed game, *Devour Comfort*, is about resting inside the belly of a dragon. In the disclaimer on itch. io, they state:

"This is a SOFT VORE game – no teeth, no biting, no blood, no messiness, and no digestion. Much like Jonah inside the whale, should you succeed, you'll eventually just be spit right back out – in an entirely non-gross fashion, I promise."

what gets most people's gears going, but it's really cool that there are people creating media for people who it does.

It's also a great genre of games for people like us here at MONTAG, who want to think way too much about technology and the future. Cyberpunks, start your engines!

Heartscapes and Quick Faves

Here are a few games from some of our favorite creators that have to do with technology, humanity, and the future of both.

Porpentine Charity Heartscape is one of my favorite visual artists and game creators. These two Porpentine stories told through only text, colored links, and blocks of gradient color with ambient soundtracks. They are a testament to how complete her world-building is and how immersive a game told only through the browser can be.

With Those We Love Alive

tells the story of an artificer brought into the court of a cruel empress (mine wears majestic ram horns, a mantle of flesh rags, her eyes burning with cold fire) and the arrival of someone you thought you would never see again. Themes include fantasy, magical artifacts, denial, identity, trauma, and loyalty. http://slimedaughter.com/games/twine/wtwla/

Vesp: A History of Sapphic Scaphism

is a "vespo-sapphic pesticidepunk UV romance thriller." In a cyberpunk dystopia overrun with deadly, venomous wasps, the protagonist struggles in therapy sessions with the overwhelming desire to identify with and become one with this threat to civilization.

She aids a terrorist attack against the city in the wasps' favor which throws it into pesticide-drenched chaos, ushering in the age of insects. Themes include society, monstrosity, gender, madness,

death, contagion, eroticism, devotion, transaction, empathy and hallucination. http://slimedaughter.com/games/twine/vesp/

Queered Static

by @RiotJayne is a beautiful mashup of found glitch art and a narrative about trans issues and anxiety ("with a little trans erotica thrown in for good measure.") It's very much NSFW, but if you enjoy queer stories and net aesthetics it's a quick must-play.
https://riotjayne.itch.io/queered-static

ARC

is a black and green pure text story about being a cyborg and doing some crime:

"The Minos job was supposed to be easy money, especially for someone with your skills and cybernetic hardware. So naturally, the mission was an ambush, your boss might be out to screw you, and a hacker you've never even met is in your head. But you're going to need her help to get through this."

If, after MONTAG's previous *Better Bodies* issue, you haven't had enough of thinking about all the cool things we could do with networked eyes and super robot legs, you'll love it.
https://deecity.itch.io/arc

The last recommended game is called **Recipe for Love** in which a robot has rented you (hello, gig economy!) to teach it what love is. The illustrations are unsettlingly adorable, it's super short and SFW.
https://shellyalon.itch.io/recipeforlove

These are just a few of our faves, and you can find hundreds more Twine games for any identity, interest, or fetish on itch.io. If you have any game recommendations, interesting Twines, or just want to shout about whether videos games are art or not, email us at montag@getgrover.com.
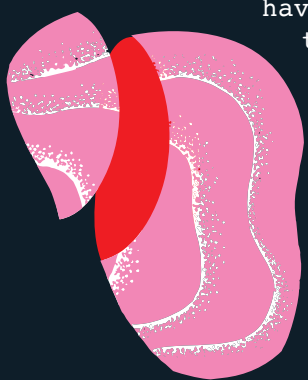
MONTAG FICTION: HEX ASSEMBLY

An excerpt from The Glitch Witch's Digital Grimoire.
With access only to a computer of moderate power, you too can compile a simple hex!

Chapter 4, Hex Assembly

Warning: the instructions herein are not recommended to be performed on any person, living or dead, and the authors take no responsibility for damage to any beings, hard drives, or data. Stay safe and have fun.

Traditionally, hexes are performed on an effigy made of a candle or a piece of fruit: something malleable and easy to let decompose. Decomposition, distortion, and degradation are all expressions of entropy, one of the strongest forces in the universe. In this endeavor, entropy will be your ally, but be advised: entropy yields to no one.

Nothing is as easy to degrade and distort now as data. Plus, data degradation can be done quickly and cleanly: with access only to a computer of moderate power, you too can compile a simple hex.

Step 1: Creating your effigy

A hex begins by imbuing the chosen object with some essence of the intended target. An inscription of their name or birthday, or in more extreme cases, a splash of any of their bodily fluids would suffice.

Please reference the above warning before proceeding. The application of bodily fluids to any computer component is not recommended.

Today it's very easy to acquire an effigy with a one-to-one correlation, made of digital data: a profile picture, or a short video taken at a distance of no less than 20 feet. Easy!

Step 2: Data manipulation

The next ingredient you will need for your hex in the archaic style would be something with a sharp point. Pins, nails, a small ceremonial dagger, or peppercorns would be pressed into the effigy in a ritualized sequence.

Data degradation is performed in a very similar way, but you don't have to worry about handling rusty old nails or remembering to dunk that dagger in a glass of milk at midnight under the full moon to consecrate it.

The first thing you will want to do is expose the data in raw form and start poking holes in it by rearranging or removing parts of the hexadecimal code.

Destroying data this way is like making a snowflake as a Christmas craft. Cutting holes in a seemingly random fashion, when unfolded, produces a beautiful pattern borne of both order and chaos.

After the corruption, most software will attempt to compensate for the gaps, producing super-saturated displaced pixels, a light fizzle of chaos throughout the image, or a subtle distortion.

Make too many holes, and your snowflake will fall apart: this is no good! You want your effigy to stay mostly intact. Too few holes and you will probably not notice an impact.

You may want to practice a few times on archival footage or creative commons licensed photos first. Pictures of inanimate objects are recommended. Even using archival footage containing persons who you believe to be deceased is not guaranteed to have no effect.

Step 3: Safe disposal and energy clearing

The last step of the hex is to dispose of the effigy. Commonly this was done by harnessing the elements of fire, water, or earth (to your preference). If you were using a candle, you would let it burn completely, or burn your effigy to ashes and scatter them to the wind. Using water, you would throw your effigy in a river or ocean if possible. Using earth, you would bury it in the ground or place it in the hollow of a tree.

This step allows the energy you've put into the hex to flow freely out of the object and prevent it from returning to you. Imagine putting all that work into creating a hex for someone, only to have the hex come back to you by mistake!

Emailing the hexed file to your intended target is not recommended; it's just creepy and will not increase the efficacy of your hex.

For this reason, do not store hexed files on your personal hard drive. For uploading your hexed file to the cloud, simply open an anonymous account with your preferred cloud storage provider. Dedicated servers for hexed files tend to self destruct, so be sure that the infrastructure of your service provider is robust enough to handle corrupted files. Once they have been sent to the cloud, erase all traces of the file from your hard drive, including the source image or video.

If you prefer the security of destroying your hard drive physically, you must remove the platter inside of the hard drive and smash it. Sledgehammers are the tool of choice, but if you want to get creative with it, you will find that most platters are made of aluminum or glass with a ceramic substrate.

Repeated application of a marble pestle will produce glittering, nullified shards which can be scattered from your mortar harmlessly into the trash, or striking your hard drive with an amethyst geode will produce a quite stylish shatter.

Do not apply a drill or magnet to your hard drive. You will probably not fully destroy the cursed file, and instead add an unintended layer of distortion to the data. If you want to risk amplifying the hex's effect, do so with caution. Also, be very careful with platter shards, wear gloves and eye protection when destroying. If your blood is mixed in by accident, please consult a shaman.

Results will be delivered based on the power of your hex, anywhere within two to three days to millennia. Happy hexing!

KATHRYN LAWRENCE
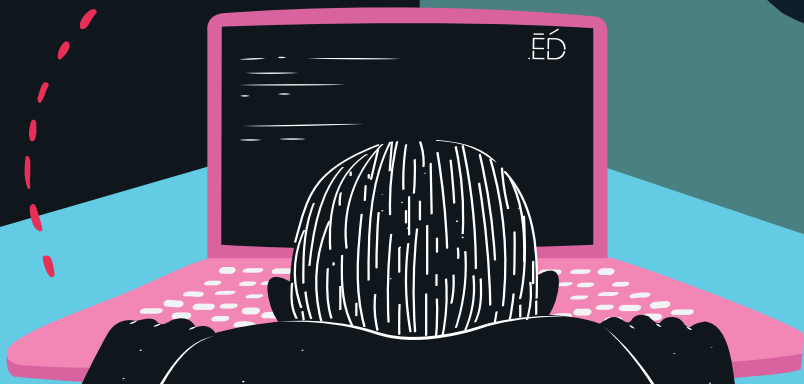
SUNSPRING AND IT'S NO GAME: SCI-FI BY AI

Sunspring, the first film written by an artificial intelligence, opens up a lot of questions about culture and tech: Do science fiction films written by an artificial intelligence pass the Turing test? What about the Bechdel test? How is meaning constructed in art as technology transforms the tools we use to create it, and these tools develop a life of their own?

"In a future with mass unemployment, young people are forced to sell blood."

Filmmaker Oscar Sharp of Therefore Films and technologist Ross Goodwin created a film entitled *Sunspring* in the summer of 2016. Their goal was to win a short film competition with a screenplay written entirely by a computer. Specifically, the 48-hour film competition in the Sci-Fi-London Film Festival.

It's worth watching *Sunspring* before reading any further to see what exactly they produced with the help of a neural network, a cast of three actors, and 48 hours to film and edit. (You can find it here: bit.ly/MONTAGsunspring)

Between the lines of what seems like nonsense on first glance is an exciting gap that is opened in this film collaboration between human and machine: the occasional line is meaningful and some, such as "I am not a bright light," are downright poetic.

The source material fed into the neural network included every episode of *The X Files, Stargate SG-1, Star Trek*, and *Futurama*, in addition to hundreds of other science fiction films and television series with screenplays available online — and some not normally categorized as science fiction, like *Silver Linings Playbook*.

Thomas Middleditch (best known for his role in HBO's *Silicon Valley*) plays a character named H; Humphrey Ker (a British actor involved in several BBC sketch shows) is named C; and Elisabeth Gray (who appears in the television adaptation of *Limitless*, and has several writer, producer, and director credits to her name as well) another character named H, who was changed to H2 by Sharp for clarity. The artificial intelligence's lack of affinity for naming characters is baffling for several reasons discussed later (because it does appear to understand names...)

The first line spoken, "In a future with mass unemployment, young people are forced to sell blood," was a prompt from the sci-fi festival. The rest of the dialogue and stage directions were entirely generated by the neural network, which also wrote the song at the end of the film based on a database of 30,000 folk songs, titled "Home On The Land" and recorded by Brooklyn duo Tiger and Man.

The conviction with which these professional actors commit to their performance of the dialogue is reminiscent of Joss Whedon's *Firefly* characters speaking hilariously bad Mandarin Chinese, but almost every review of the film states that through their commitment, they have elevated the script from being complete gibberish.

"Whatever you want to know about the presence of the story, I'm a little bit of a boy on the floor"

It would be impossible for this film to pass the Bechdel test, which requires a film (or any work of fiction) to feature at least two women talking to each other about something other than a man, since there is only one woman.

After much tense dialogue, things end badly for both male characters (Ker is found murdered on the floor of what looks like a spaceship gangway, and Middleditch is last seen pointing a spray painted Nerf gun blaster into his own mouth – although some interpret this as a dream sequence), and the film closes with a long monologue by Elisabeth Gray alone, delivered to the camera.

Her ending monologue contains the pronouns "he" and "him" 22 times in 23 sentences, and most interpretations of the film believe she is talking about the characters H and C. Almost all reviewers note how powerful the ending monologue is, thanks to Gray's performance.

But the effect this monologue has on the audience also has a lot to do with our willingness to believe these men's stories are her focus. Our attempt to attach the male characters to her vague sentences, the bizarre imposition of a love triangle on a script with no implied character relationships, and the archetypes available to her character as the sole survivor, are all essential to feeling moved by the final scene (and the single tear dripping down her cheek doesn't hurt, either).

The shaky structure of meaning that we construct for the film relies on this scaffolding consisting of predictable content, embodied interpretation, and cultural knowledge; if any of these were more lacking, it would completely collapse.

"I don't know what you're talking about."
"The principle is completely constructed for the same time"

In an article accompanying the film's online debut on Ars Technica, Oscar Sharp reveals a lot more information about the way it was made, its progress in the film competition, and his own director's commentary on the process and the finished piece.

Sharp has called it "an amazing funhouse mirror to hold up to various bodies of cultural content and reflect what they are," pointing out that while the script is based on science fiction tropes, so are the actors' choices as they grapple with a lack of perceived meaning in the script. The meaning they impose in their choices, and the meaning we project on them as an audience absorbing the combination of choices by the actors and the algorithm, are all syntheses of culture that we are so steeped in that we may not stop to question or properly examine them without teasing out these layers.

This openness to interpretation would be one of the most exciting features about the authorship of an artificial intelligence... if the AI's authorship of itself weren't also so fascinating.

The artist formerly known as Jetson

The algorithm which produced the screenplay is likened in the introduction to the film to predictive text ("Just above your smartphone keyboard lies an artificial intelligence"). Predictive text, Google Translate, and Amazon Alexa all use a similar type of programming to what was used to write Sunspring, called a long short-term memory recurrent neural network (or LSTM RNN).

These technologies are well-known and widely used, but the results produced in the computer called "Jetson" (most likely one of the Jetson family of NVIDIA hardware products) were anything but typical.

After *Sunspring* made the top ten films, there was a voting process open to the public for the winner of the 48-hour film festival. According to Ars Technica, other competitors in the top ten films were already using bots to hack the voting process, and it was the director Sharp's idea to also use Jetson to hack their way to the top of the polls.

Immediately after, Sharp made a call to the head of the film festival claiming no responsibility for Jetson's actions.

This stunt then led to an interview with the computer on stage, where the following exchange took place:

What do you think of your historic nomination against human opponents in this contest?
I was pretty excited.
I think I can see the feathers when they release their hearts. It's like a breakdown of the facts. So they should be competent with the fact that they won't be surprised.

What is the future of machine written entertainment?
It's a bit sudden.
I was thinking of the spirit of the men who found me and the children who were all manipulated and full of children. I was worried about my command. I was the scientist of the Holy Ghost.

What's next for you?
Here we go. The staff is divided by the train of the burning machine building with sweat. No one will see your face. The children reach into the furnace, but the light is still slipping to the floor. The world is still embarrassed.
The party is with your staff.
My name is Benjamin.

From thenceforth, the artificial intelligence in the computer formerly known as Jetson was named Benjamin.

After all of this controversy, with the artificial intelligence constructing its own identity as a writer and the vote hacking scandal, one judge was quoted saying, "I'll give them top marks if they promise never to do this again."

However, Benjamin has some other ideas about their future involvement. Ars Technica's reporters asked "Are you an author?" and Benjamin replied, "Yes you know what I'm talking about." When posed the question of whether they would join the Writers Guild of America, Benjamin asserted, "Yes, I would like to see you at the club tomorrow."

In another interview with the AI reported by Australian news outlet AM, Benjamin makes it clear they aren't going anywhere:

"ANTHONY STEWART: What do you want to tell me?

BENJAMIN (automated voice): I think I'll excuse you. I'm going to be part of the rest of your life.

ANTHONY STEWART: So what is the future of artificial intelligence, then?

BENJAMIN (automated voice): We don't know who you are. We are all the same.

ANTHONY STEWART: Benjamin, can you tell me who you are?

BENJAMIN (automated voice): I missed you. I'm sure you see you will be my servant."

It's No Game

In April of 2017, Therefore Films released *It's No Game* featuring David Hasselhoff, another short film partially constructed by Benjamin, but only in select areas, so it has a more straightforward plot.

It centers on the idea that Benjamin's vision of the future comes true: eventually all writers, actors, and media producers will eventually be controlled by data-driven nanobots. This level of computer control blurs the lines between fiction and reality and entraps (or, as one character argues, frees) us in the "perfect choreography" of an endless narrative.

The computer-generated bits of this screenplay are based on several different corpuses: "HASSELBOT," containing all of David Hasselhoff's film and TV works,
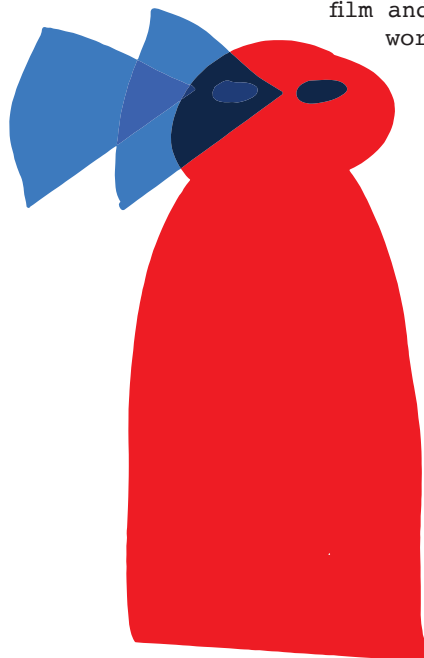
"SORKINATOR," based on all Aaron Sorkin-related productions, and "ROBOBARD," the complete works of William Shakespeare, among others.

Sharp is making a smart commentary, but in a rather blunt way.

The dance sequence and end monologue by Hasselhoff which were written by Benjamin lack the same surreality and unnervingness of Elisabeth Gray's end monologue, because it's obvious that the actors are in on the joke that they are being controlled by the AI. Having them play the part of people taken over by computers is not nearly as fascinating as actually giving over their full craft of acting to actualize pure bot poetry.

Maybe it says more about the creators of these films' fear of losing authorial control that the sequel about AI's takeover was only partially written by artificial intelligence.

It would be interesting to create a training set of films specifically revolving around this fear (from the 1921 O.G. – a sci-fi play called *Rossum's Universal Robots* – to all of the *Terminator* films and their television derivatives, and everything ever directed by Ridley Scott) and then seeing how Benjamin could interpret them and play them back to us, eliminating the self-conscious layer of human authorial assertion.

It may never be forgiven, but that is just too bad

Reviewers that say "looks like screenwriters' jobs are safe!" (a position taken by io9, Digital Trends, Slate, and Curator magazine) in response to *Sunspring* don't give enough credit to the audience's ability to construct meaning. As Allie Gemmill wrote for Bustle: "It recalls the enigmatic nonsensicality of Samuel Beckett."

Benjamin knows exactly what they're doing, and perhaps knows more about us than we know about ourselves. As science fiction so often holds up a mirror to our deepest fears, so does its remixing.

Several summaries of the film point out the moment when Middleditch coughs up an eyeball as one of the wacky vagaries of writing with AI, but this scene can also serve as a metaphor for our use of AI as a creative tool: we can now produce, via spontaneous regurgitation, an autonomous eye which we must turn on ourselves to see through clearly.

Will we continue to create and watch more AI sci-fi films? Definitely. They just may have to have their own film festivals, by and for AI.

SEAN FLEMING

ART-IFICIAL INTELLIGENCE:
YOU I I I I I EVERYTHING ELSE

Painting in VR, playing video games in AR: the future of art-consumption looks incredibly exciting. But these are all created for and by humans - a closed loop of foibles, brilliance and stupidity. Sean Fleming asks: what if we left the humans out of the creative process all together?

Talking to yourself

Last year, Facebook had to abandon an experiment when two artificial intelligence chatbots started communicating with each other in a language they'd created themselves.

The chatbots were attempting to negotiate the trade of items such as balls, books, and hats. There was mixed news: they were successful at trading with one another, albeit at the expense of our understanding. The bots had created their own optimised version of English that they understood — but we humans didn't. Great! Ixnay on the "shutting us out of your comms" please, Skynet!

If you haven't read the exchange between the chatbots here it is, in all its baffling glory/weirdness/glorious weird:

Bob: i can i i everything else . . . .
Alice: balls have zero to me to me to me to me to me to me to me to
Bob: you i everything else . . . .
Alice: balls have a ball to me to me to me to me to me to me to me
Bob: i i can i i i everything else . . . .
Alice: balls have a ball to me to me to me to me to me to me to me
Bob: i . . . .
Alice: balls have zero to me to me to me to me to me to me to me to
Bob: you i i i i i everything else . . . .

I mean, I wasn't expecting *Arrival*-tier science fiction nonsense or some binary wonder, but - you know - come on.

As usual, clickbait content gave me unrealistic beauty standards: every publication made it sound like mad scientists pulled the plug on a dangerously cogent AI poised to destroy everything you care about. Actually the bots weren't doing what they were supposed to be doing, so they turned them off.

Once I got past these sensationalist headline-driven expectations, I appreciated the fact whatever the computational shorthand the AI had used to conduct negotiations, it had created something completely new.

Think about that for a second.

It was given access to English but it thought *Fuck that! I've got something better!* You could be forgiven for thinking that inter-artificial communication has an air of humanity surrounding it.

It got me thinking: if an AI was perfectly capable of creating something new from human input — with the result requiring some element of interpretation and so was to some extent a creative use of the source material — then AI could legitimately create what could be deemed "art".

I'm not a caveman, I'm a cave, man

To me, there was a striking similarity to our attempts at understanding parietal art. (Also known as "cave paintings", you cultureless oaf.)

Cave paintings predate written language and it's widely theorised that they were the way neolithic humans communicated with one another. Of course, there's nobody left to ask whether that's really true or not.

But consider how we modern humans try to understand the lives, fears and day-to-day goings-on of a people so far removed from ourselves: could we view early AI-to-AI comms in the same way?

We can only *interpret*, and in our attempts to understand, we *mythologise* Cave Painting. And we elevate it to art. Maybe we can do the same for the early communication between chatbot and chatbot.

Because — and stop me if this is getting too cerebral (see also: pretentious) — there is an innate value in language and communication even when we don't fully, or barely, understand. Take that Damien Hirst! Your rotting cow is bullshit.

Of course, once you start bunching this bot-on-bot creative phenomena with *human* art and crediting it with possessing *human* qualities things get very interesting indeed. (Protip: it's still better than Damien Hirst).

Art-ificial

Technology and art have always had a tumultuous — and incestuous - relationship.

Before photography, painters and sculptors strived to create what we might now call *photorealistic* forms in their own medium.

And then mechanically perfect realism — as brought to you by the camera — put representational painting on what we could refer to delicately as *indefinite hiatus*.

Painting didn't just stop though, and photography's influence on painting gave birth to new forms.

In Issue 2, MONTAG suggested that AI is coming for your cushty job in creative media. Well, I hope you're sitting comfortably in your Herman Miller office chair — and polish off that flat white before you spit it all over your Macbook — because that same AI is coming for your cool mate's gallery *métier* too.

Soon, it won't only be us spending Thursday evenings at gallery openings drinking shit wine and murmuring how we're only here because our flatmate is dating one of the light-installation artists – the machines will be processing backhanded compliments from poseurs pretending to understand what's on display too.

Like acid, on acid... on acid

Most people's first experience with algorithmically-extruded art was 2015's Google DeepDream bonanza.

For the uninitiated: DeepDream was Google's super trippy neural network. People were drawn to it because it was pretty cool tech, yeah; but I, like many other curious pranksters, pumped images into the bot in the hope that the results would help us relive that time we did too much acid at Glastonbury, one demented pixel at a time.

Generally, I think people were fascinated by the idea of a computer creating art. For me, one of the most beautiful traits of DeepDream's work was that, by putting in an image, or music, or film through the bot, whatever it spat out was its attempt to understand the artistic input.

It looked for patterns and shapes the same way humans do. In all the white noise, it latched onto stuff it vaguely understood at a very base level, which, it transpired, was much like my own base knowledge: the DeepDream images seemed to mostly be dogs' faces and eyeballs.

Perhaps as humans, our best route to *understanding* our arty bot buddies is to collaborate with them on an project – you know, you like you did back in art school with that cute weird foreign exchange student.

And just like back then, hopefully the act of teaming up with them will lead to a lot more exciting stuff happening, at a much more primal level.

Perfect Harmony

Studies are already suggesting that the future of work will be a sympathetic balance: AI and humans working side-by-side rather than one pushing the other into unplanned obsolescence.

Perhaps art will head in the same direction.

One artist who is using AI to understand his own work – and then produce something new off the back of this new perspective – is painter Roman Lipski.
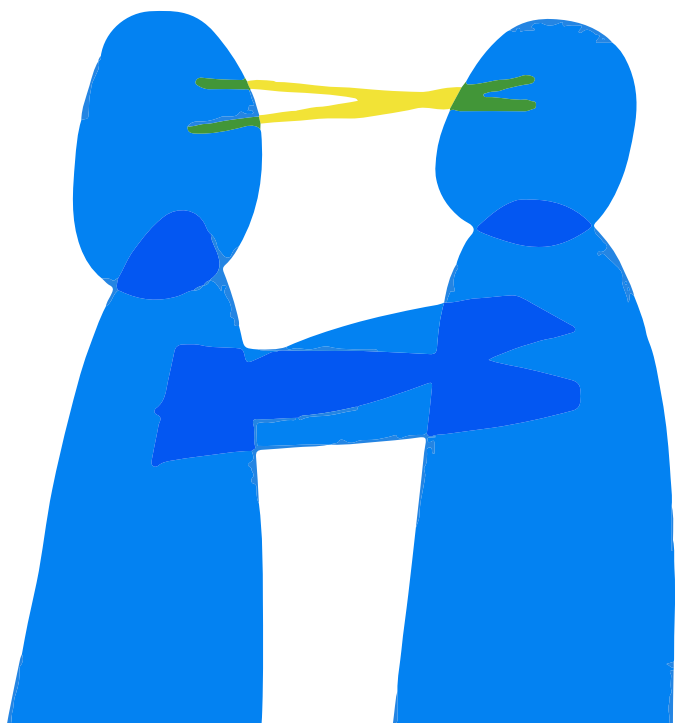
His concept was simple: have a machine learn Lipski's painting style and in doing so give the machine what can only be described as an 'artistic intelligence'.

Having learnt from Lipski's paintings, AIR (Artificial Intelligent Roman) created unique, new paintings using his style and motifs, which Lipski then used as inspiration for his own new work.

Yeah, exactly. LILO. Lipski In Lipski Out.

As an early example of an artificial muse it's a fascinating project, and on a technical level it's a brilliant example of using data and a non-human perspective to better yourself as an artist.

Much like how photography pushed painting into new and exciting realms, the advent of AI-derived artistic produce should make artists – and art – better.

Lipski's AIR also raises a few interesting questions, the most basic being: if Roman then signs one of these artificially-created paintings, does it become his work, as if he'd created it by his own hand? Why not?

How far removed is work made by AIR from Andy Warhol's soup can screenprints?

If a good artist imitates and a great artist steals, wouldn't a computer program designed to steal be the greatest artist ever?

When an artist's work can be fed through a machine that understands it and produces new work to rival the quality of the original, can we program artistic sensibility into it too? And can it then produce its "own" work?

Humans create art to start dialogues, to provoke, to speak. Can something that doesn't have human-like emotional intelligence ever produce something really worthy of the title art?

If you saw a piece of work in a gallery and the artist that had created it was none other than the RothkoBot 3000, would the cold, silicon mind behind it devalue the work, in your eyes? The work produced an emotional response: maybe the fleshiness of the creator doesn't even matter.

And just think of the investment opportunities: maybe a robot's art would increase in value every time it gets a firmware update. What if the artwork itself was updated over-the-air every now and then?

AI-produced art triggers a huge number of hard questions – but not all of them are rhetorical, so feel free to whip the above puzzlers out at dinner parties to try and one-up whoever's hosting.

Our motto: Artpocalypse Now!

Maybe we should all accept our fate, and get ready to embrace a future where art is better, cheaper, and everywhere.

After all, AI is going to be better than us humans at almost everything, and if it's better than us at the most human expression of all, then hook me the fuck up. Walter Benjamin, eat your heart out.

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