DING — A magazine about the Internet and things #2 2019

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EDITOR IN CHIEF

Julia Kloiber is the Co-Founder of the Prototype Fund and a Mozilla Fellow. Her work focuses on emerging technologies and their impact on society. Tired of tech-determinism and dystopias, she started to speculate about the future and to work on this magazine.

CONCEPT OF DING MAGAZINE

Michelle Thorne is a Senior Program Officer at the Mozilla Foundation, specializing in the Internet of Things and emerging technologies. She previously led the Mozilla Open IoT Studio, Mozilla's web literacy programs and produced the Mozilla Festival.

Jon Rogers is an academic at the University of Dundee and a Mozilla Fellow. His work explores the human intersection between digital technologies and the design of physical of things.

This is the golden age of pessimism. And we're tired of it.

Why is it easier to imagine how the world ends rather than articulate a vision of the world we really want? Let's say goodbye to oppressive technology and economic disenfranchisement! Let's go beyond apathetic politic and dystopian science fiction and look to revive the struggling planet.

With this edition of DING magazine we set aside the dystopian stories. We don't want them to become self-fulfilling prophecies. We believe that by exploring positive scenarios, we can increase the probability of more desirable futures. We invited writers, technologists, researchers and designers from all around the world to help us unpick the stories of a time that is yet to come. They investigate the future from many different angles and take a look at structures rather than technologies. Communities, nature, other species and imagination play a vital role in the essays. This magazine, as the future of our planet, is about more than humans.

The historian Andrew Prescott and the artist and researcher Luiza Prado investigate past beliefs that still influence the future, from the invention of the computer as a tool to divide labor to the material traces on artwork that hint at their creators' socio-economic struggles. adrienne maree brown takes us to communities in Detroit and to visionary fiction that helps to time travel for perspective. For Anab Jain, growing mushrooms encouraged her to move the center of her design practice away from only human users to encompass instead more species and complex systems, an approach that's "more than human". Audrey Tang shares her vision for democracy, and how intersectionality and radical transparency can lead to better societies.

The future is a big place. It can contain many many possibilities. It is a set of stories that we can write and imagine ourselves. We're up for this and would love you to be too. There is no single future. There are many possible futures. They start here.

Julia

LETTER FROM THE EDITOR

I. *Terraforms – Or, How to Talk About The Weather*

Ingrid Burrington

Ingrid Burrington, author of 'Networks of New York: An Illustrated Field Guide to Urban Internet Infrastructure', tells jokes about places, politics, and the weird feelings people have about both. We asked her to talk to us about the weather.

To be twenty-first century scientists on Mars, in fact, but at the same time living within nineteenth century social systems, based on seventeenth century ideologies. It's absurd, it's crazy, it's — it's —" he seized his head in his hands, tugged at his hair, roared "It's unscientific! And so I say that among all the many things we transform on Mars, ourselves and our social reality should be among them. We must terraform not only Mars, but ourselves."

— *Red Mars,* Kim Stanley Robinson

illustrations by Pussykrew

No one really makes small talk about the weather anymore. Although it remains a frequently maligned trope of desperate silence-filling conversation, in the era of commonplace climate change the weather can quickly become large and sometimes contentious talk. A warm sunny day in February might be a pleasant respite from a frigid Berlin winter, but it's also a reminder of the massive planetary shifts humans have initiated. It invites uneasy laughter and uneasier social footing. Should we enjoy this weather? Am I complicit in destruction for enjoying it? Does this person I'm talking to believe in climate change or think I'm the victim of an elaborate Chinese hoax? Talking about the weather is no longer an articulation of an obviously shared reality but a signifier of how we understand the world in which we live and how we imagine that world will look in the future. Climate change has made small talk into speculative fiction.

I'm writing this on a mild, sunny morning in October. My weather app says it's 20°C outside, though there's enough wind to make it seem a bit cooler. For a lot of this month—for a lot of this year, really—I haven't been sure what season it's supposed to be on a day-to-day basis. When people ask me how I am that's what I say: "I don't know what season it is supposed to be". They'll laugh, uncomfortably, because that sounds like something someone having a nervous breakdown might say. But it's entirely true, and they know it. The swings from dismal overcast chill to clammy, room-temperature sauna humidity and downpour to equilibrium have been abrupt, baffling, though increasingly a new normal of New York weather. It's maybe existentially appropriate weather for the political conditions of living in America in 2018, where national (and natural) disasters seem to rapidly shift on an hourly basis.

When people ask me how I am that's what I say: "I don't know what season it is supposed to be"

Right now on Mars it's apparently also sunny, though the temperatures are far less pleasant at a high of 5°C and a low of -64°C. The Rover Environmental Monitoring Station[1], attached to the Curiosity Rover, has been monitoring the weather on Mars for a little over six years. Their monthly weather reports are surprisingly compelling descriptions of the planet's geology and climate, where suspended dust particles in the atmosphere can be so fine they're more akin to smoke and average temperatures are well below freezing. This is the place that tech billionaires and a lot of science fiction writers believe humans can, nay *must*, make humanity's new home and that such a reality is more likely, compelling, and worth pouring billions of dollars into than say, giving fair wages and health benefits to their lowest-paid contract workers so they can comfortably survive on *this* increasingly environmentally hostile planet.

In good science fiction (or maybe in what I think constitutes good science fiction), the weather and environment constitute as rich and significant a character as the people or aliens we're supposed to be rooting for or against. This is the work of world building: making an

alternate reality, planet, or future where readers can reflect on the possibilities of our own world. Sometimes world building is misunderstood as the primary intent of science fiction, which is perhaps why one of the most common criticisms of bad science fiction is the use of clumsy, under-defined or uninteresting characters whose motives and actions seemingly only exist to exposit the lush and complex imagined world.

The Wikipedia entry for world building features a disambiguation caveat that it is not to be confused with *terraforming*, which is the work of transforming other planets into earth-like environments. But terraforming itself remains in large part fictional, or at least hypothetical. Its provenance allegedly lies in a 1942 short story published in *Astounding Science Fictio*n. It also remains a common trope in science fiction world building - the yes-they-really-named-it-that Project Genesis terraforming device in *Star Trek II: Wrath of Kahn*, the terraforming as business model offered by the *Alien* franchise's Weyland-Yutani Corporation ("Building Better Worlds™"), and as long-term project of political economy and geoengineering envisioned in Kim Stanley Robinson's *Mars Trilogy*. And terraforming assumes a level of control over the natural environment similar to the kind exercised by the novelist or screenwriter trying to world build a compelling fictional universe. It's nature by the numbers: we get the interplay of chemistry and microbes *just right* and shift the temperature *just* so, a noxious, gaseous atmosphere becomes breathable and volcanic rock becomes soil.

Perhaps the most substantial (if ad hoc and haphazardly documented) terraforming project undertaken by humanity has been Earth itself. Agriculture, water management, cloud seeding, scientific forestry, mining, cities, railroads, highways, satellites, submarine cables—all of humanity's schemes that have changed their environments have, in some part, rested on the assumption that they could control them and, to borrow from Weyland-Yutani, build a better world than the planet they were on. To do so was to be a champion, a conqueror manifesting her colonizer destiny, and the language surrounding these efforts often suggested a heroic narrative. Why else would the act of dredging earth from the seabed and constructing artificial islands be referred to as "land reclamation", as though the sea had denied us the property we were entitled to?

Of course, the environment is not a story nor, as artist and engineer Tega Brain has noted, is it a system[2]. Narratives about towering human achievement over nature tend to have corollary ones about their undesirable byproducts—resistant weeds and monoculture, desertification, radiation, starvation, genocide, war, climate change. Systems and markets can afford to label such adverse effects as externalities; planets cannot. A short few hundred years of human terraforming on this planet has created many different terraforms, many unevenly distributed and interdependent worlds and futures in which one world's progress and quality of life is contingent on another's oppression. Weyland-Yutani doesn't Build Better Worlds™ for everyone, and turning the planet into a computer—even in the service of supposedly making people more connected to each other—is no less culpable an act of terraforming than the strip mining and pollution that makes all the hardware used in that computational terraforming possible.

The same week I began drafting this essay, the United Nations Intergovernmental Panel on Climate Change (IPCC) released its 2018 report[3] on the effects of planetary warming to 1.5°C. As a literary work, it is perhaps somewhat lacking; yet in story after story, reporters emphasized that the report's dire predictions were not "the stuff of science fiction." To enact the dramatic changes that the IPCC report calls for will entail a massive new terraforming of this planet—the construction of new energy infrastructures, geoengineering tactics, carbon capture techniques. It also requires a sort of political and social terraforming: building societal structures that will support these radical environmental shifts and the mass population displacement and political transformation that will go with it. Instead, we see terraforming by way of new submarine cables running through the newly-melting Arctic Circle and new container ship routes through melted ice. We see sociopolitical terraforming by way of white nationalists and fascists demanding a monoculture society. We see billionaires plotting interplanetary escape routes to inhospitable planets, insisting that they can conquer them without the blood of past conquering ages of exploration. We see that there already is a lot of blood, and there will be more, and maybe at best we get to decide if it's theirs or ours.

When I talk about the weather, when I say I am not sure what season I am in, what I am really trying to say is this: the terraforms of this planet have not served the planet or its residents particularly well, and I do not know how to convince anyone who has only known power as instrument of oppression and only known oppression as economic externality that they are not building better worlds. I am not sure I have sufficient power or agency to put forth a new terraforming strategy, and I am not sure if it is already too late to do so, but perhaps if we talk enough about the weather a kind of solidarity and collective power might emerge. Talking about the weather is a frame for talking about the worlds we believe are possible, the kind of terraforming we wish to do—not only on Earth but on ourselves.

1 cab.inta-csic.es/rems/marsweather.htm/
2 aprja.net/the-environment-is-not-a-system/
3 ipcc.ch/report/sr15/

II. *On Persistence: The Past Art/Works of An/Other Future*

Luiza Prado

Luiza Prado de O. Martins is an artist and researcher born in Rio de Janeiro in 1985, four hundred and eighty-five years after the Portuguese first invaded the land currently known as Brazil. Her work investigates the ways in which colonial gender difference is inscribed and imposed upon and within bodies through technology. In her essay she explores the influences on the persistence of artworks.

Like all other things, art senses the passing of time. Paint becomes dry and flaky; bronze gets tarnished and corroded; fibers and fabric get thin and tattered and may be attacked by a variety of insects; marble breaks and cracks; resins and plastics become yellow, brittle and cloudy. Dust, grime, and grease—not to mention stray hairs or microscopic bits of food—accumulate on surfaces, sometimes for centuries, before being cleaned. The condition of a work of art often tells a compelling story of time not only as a material, but also as a political and social condition. A tear in a painting might have been caused by the butt of a rifle belonging to a Nazi officer invading a house.[1] Moth damage to textiles might be discovered only in the occasion of the piece's removal from storage, years after the infestation began and when the piece is already damaged beyond repair.[2] A piece of public art might be removed, possible damage notwithstanding, from the place it was conceived and commissioned to be in, as a result of increasing political hostility toward its message.[3] Another piece of public art might be expressly designed to be demolished, materialized only for a brief moment before ceasing to exist in all but images and memories.[4]

Upper image: *Augusta Savage with sculpture*, 1938
Left image: *Augusta Savage with two of her statuettes*, entitled "Susie Q" and Truckin'"

A meditation on how time leaves imprints on artwork must, of course, consider materials: some, like steel, marble, or bronze, are hardier than others, like loosely woven fabrics. There is, too, the issue of medium: the (ostensibly) ephemeral nature of performance art pitted against the (ostensibly) hardy nature of sculpture. And there are the questions of technique and technology: applying additional layers of varnish or lining meant to protect a painting for centuries to come can backfire spectacularly just decades later, when they turn out to worsen the very damage they were trying to prevent.[5] In their own particular ways, artists and art conservators are like disembodied time travellers, projecting the artwork toward a time that they will not be able to see—or foresee. A gift to the future; a performance of persistence.

Yet there is more to be extracted from this idea of persistence than a mere consideration of material, medium, or techniques and technologies. Persistence can describe the continued or prolonged existence of something, but also indicate a continued course of action in spite of adversity. Though seemingly simple, these meanings multiply across contexts; persistence—or the ability to persist—is not to be taken for granted. It is not an aspirational platitude. For some, persistence can be a battle; an ongoing, hard-won struggle against the blunt end of the necropolitical—that is, the structures of power that determine who may live, and who must die (Mbembe 2003). The production of death as an enactment of power isn't limited to the body; it encompasses affect as much as it does flesh.

Bodies deemed disposable by the necropolitical order produce art deemed equally disposable. It is not coincidental that the artwork that persists through time—and that can, thus, be projected towards the future—is most often produced within a specific set of constraints that make its survival, and that of its creator, guaranteed within the necropolitical order. In designing an artwork meant to exist for years, decades, or even centuries, the artist projects something toward the future, but this materialization of affect does not occur in a vacuum. Having access to time, space, funding, and materials—amongst other factors—is fundamental to the persistence of both art and artist.

Necropolitics—a noun to which I am tempted to add the adjective 'colonial' not because Mbembe failed to address the relationship between the two, but as a reminder of the strength of this link—was, and continues to be, a force that shapes the presents of art and artists of color. The loss of art is a loss of the ability to conceive persistent presents, pasts, and futures. Time is a fragile thing; gaps and voids lead to cracks in the surface of life that might never be bridged again.

The life and work of African American sculptor Augusta Savage is an instance of how necropolitics, in defining those who get to live or not, also defines whose artistic manifestations persist. Born in 1892, Savage was a key figure in the Harlem Renaissance—an artistic, intellectual, and political movement that spanned the 1920s and had profound repercussions in African American culture. Her trajectory was marked both by her exceptional talent, and the extraordinary nature of the challenges and struggles she faced. From enduring whippings from her father as a child due to her interest in art to completing a four-year course at the Cooper Union in only three years,[6] Savage was nothing if not persistent; yet this tenacity did not guarantee the survival of her body of work. Savage worked most often with plaster and clay—two friable, fragile mediums, most commonly used for creating the first molds for pieces that will be later cast in hardier materials, such as bronze. Typically, however, Savage's clay and plaster sculptures were finished pieces, rather than prototypes—not due to a calculated desire for ephemeral or impermanent work, but due to the high cost of bronze casting. As a result, works like "Lift Every Voice and Sing" (also known as "The Harp"), commissioned for the 1939 World's Fair in New York City, were destroyed after exhibition, for Savage did not have the funds or space to store the sculpture, nor to have it cast. Of the piece, only photo and film documentation—and perhaps some of the small metal souvenir copies sold at the fair—survive.

Granted, not all of Savage's work was lost to the necropolitical mechanisms of financial instability, systemic racism, and gendered inequality. "Gamin" (1930), one of her most famous pieces, is currently part of the collection of the Smithsonian African American Museum. At first sight, the bust might look like a bronze cast; at closer inspection, however, the piece reveals itself as another example of her plaster sculptures, the young boy it depicts cleverly shaped and painted to resemble the texture and color of bronze. If in a way it is beautifully fitting that this sculpture—an early work that won Savage a scholarship for a period of travel and study in Europe that helped shape her career—is one of her few surviving pieces, "Gamin" also bears witness to the massive gaps left by the loss of her art. This is a piece that speaks of itself as much as it does of far broader structures. Is it perhaps the accumulated, compressed weight of centuries of inequality that shapes the enigmatic expression of the boy? Or, most poignantly, is it the prescience that, against all probability, this bust will withstand the test of time, elements, and systemic adversities to persist and expand possibilities towards futures unknown?

Image: Augusta Savage, *Gamin* (ca. 1929), painted plaster

1. instagram.com/p/BmlgWpugJrA/?taken-by=baumgartnerrestoration
2. tate.org.uk/context-comment/video/lost-art-joseph-beuys-felt-suit
3. hyperallergic.com/463819/on-day-of-german-unity-city-of-kassel-removes-artists-monument-for-refugees/
4. artsy.net/article/artsy-editorial-rachel-whitereads-house-unlivable-controversial-unforgettable
5. cats-cons.dk/wp-content/uploads/2013/05/PM_Art-Masterpieces-threatened-by-frequently-used-preservation-technique.pdf
6. americanart.si.edu/artist/augusta-savage-4269

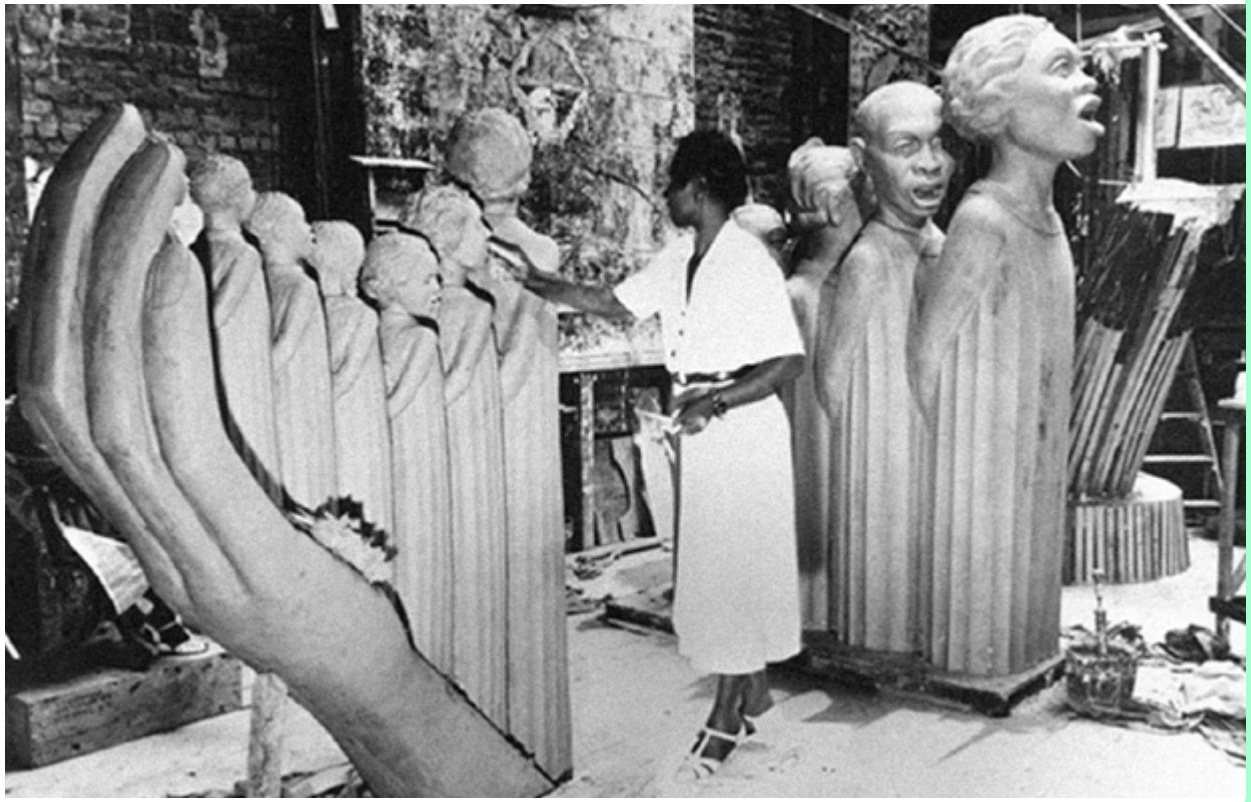
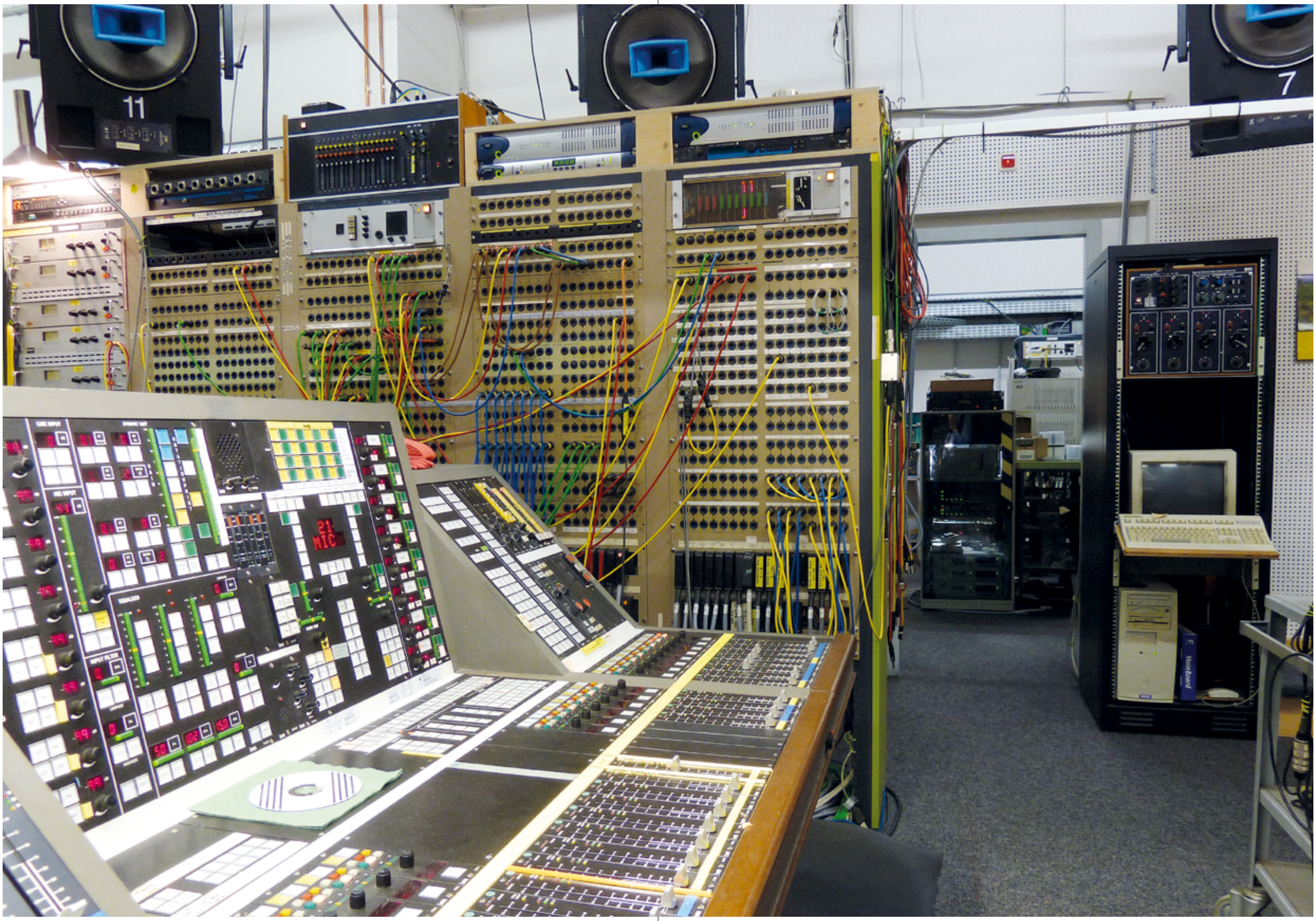


Image: Augusta Savage with her sculpture “Lift Every Voice and Sing” (also known as “The Harp”)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III. *What the Enlightenment Got Wrong about Computers*

Andrew Prescott

Andrew Prescott researches Digital Humanities at the University of Glasgow. He is a medieval historian who previously worked in the Department of Manuscripts at the British Library. When it comes to learning about the future, there is no better place to start than with our past. We asked Andrew to look through the long lens of history to tell us about the future of networked computers.

The way we think about computing is fundamentally shaped by the nineteenth-century civil service. In his brilliant book, *The Government Machine* (MIT Press, 2003), Jon Agar shows how the computer was the product of a technocratic vision of government that developed from the late eighteenth century and sought to manage a rapidly changing world by gathering as much statistical and other information as possible.

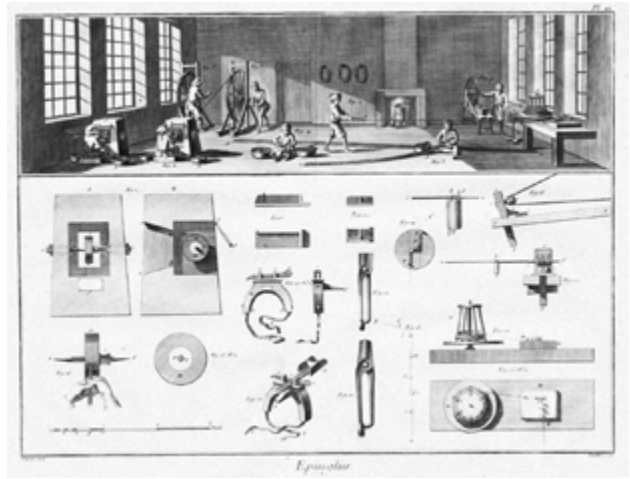
The civil service that emerged in the Victorian period had at its heart an administrative and intellectual division of labour. Thousands of clerks were employed to carry out routine set tasks, such as copying letters and making arithmetical calculations. Middle managers controlled the flow of this routine work and dealt with any hitches. Senior civil servants (the 'First Division') dealt with complex matters of policy advice and development.

The computer arose from the dream that the routine clerical work of government could be mechanised. The vision of the nineteenth-century scientist Charles Babbage in developing mechanical engines whose functions anticipated aspects of our digital computers was to produce a machine that could perform the routine mathematical calculations carried out by clerks in offices such as the Admiralty. Much later, the aim of the scientists and technicians at Bletchley Park building early electronic computers was similarly to speed up the decryption of military cypher traffic.

Previous page: Studio for electronic music at WDR, Cologne

The organisation of the civil service into hierarchies that split routine work and decision making reflects the principle of the division of labour, most famously described by the Scottish philosopher Adam Smith in his 1776 book, *An Inquiry into the Nature and Causes of the Wealth of Nations*. Smith describes how manufacturers increase their output by dividing the process of manufacture into different components, with each worker being a specialist in just one part of the process.

Adam Smith illustrated the division of labour by referring to the example of the manufacture of pins: 'one man draws out the wire, another straights it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head … it is even a trade by itself to put them into the paper; and the important part of making a pin is, in this manner, divided into about eighteen distinct operations, which, in some manufactories, are all performed by distinct hands, though in others the same man will sometimes perform two or three of them'.



Smith calculated that by these means, ten people could make 4,800 pins a day, whereas if they had each made the whole pin, they would only have produced about 200 pins a day. Smith saw this principle of the division of labour as fundamental to efficiency and thus to prosperity, and as manufacturing became more and more automated, the aim became to identify those elements of the division of labour what were susceptible to automation.

Faster, cheaper, more efficiently: these are the words we are accustomed to associate with automation and computers. Computers are a means of reducing costs, eliminating the routine, enabling governments and companies to perform their business quickly and cheaply. We judge automation by its ability to cut unit costs and increase speed. Businesses look to keep IT costs as low as possible, to minimise support costs.

But is this vision of automation, rooted as it is in the Industrial Revolution, the right one? Can it be true that computers are just a means of streamlining the division of labour? When I started work as a librarian in the civil service in 1979, if I wanted to answer a letter, I drafted a reply in longhand. I put my draft reply in the outbox, and a messenger would take it to the typing pool. A professionally trained typist would type the letter, and a messenger would bring it back for me to check and correct.

Image: Pinmaking, from Diderot's Encyclopédie, 1762

The typing of a letter was a small example of the division of labour. However, with the emergence of personal computers and word processing, I started to type the letter myself. The typing pool disappeared, even though I am a very inefficient typist. If I needed to have a draft of my letter checked, I sent it by email, rather than office messenger, and this job also disappeared.

The networked computer is an all-purpose machine that challenges the idea of the division of labour

Far from reinforcing the division of labour, the personal computer has dissolved it. The production of a letter has become a job involving one person, rather than the three or four who were involved in 1979. Since this involves my very poor and inefficient one-finger typing, it is by no means clear that this is an improvement in efficiency, even if it may involve some reduction in staff costs.

The networked computer is an all-purpose machine that challenges the idea of the division of labour. I can use a networked computer to do a host of things that previously required specialist equipment and facilities: make phone calls, send text communications, write, calculate, read books, watch films, listen to music, book travel, take photographs, make videos—the list is endless. This is the antithesis of the division of labour.

Because the networked computer is an all-purpose machine acting as an extension of my mind, giving me new opportunities for creativity and imagination, it is much much more than something that just enables routine jobs to be done more quickly and cheaply so as to promote economic growth and prosperity. The networked computer is a powerful means of reimagining the world and reshaping human understanding in more beautiful ways.

When I was a teenager, I was entranced by the music of John Cage and Karlheinz Stockhausen. I was excited by the way Cage had experimented with audio frequency oscillators, wire coils and variable speed turntables in the 1930s and 1940s to produce some of the first electronic music. Stockhausen said of his pioneering 1955 electronic piece, *Gesang der Jünglinge* (*Song of Youths*), "I often dream that I can fly, and I want to make music fly. I put my hands on the faders and I send sounds through the air."

The attraction of electronic music is not that it is cheaper or more efficient, but rather that it opens up new creative visions. The most exciting explorations of digital technology are those which investigate its potential to generate innovative sounds and visions. David Hockney did not produce iPad art because it was quicker or more efficient but rather because of the new affordances of the iPad. Artists exploring algorithmic art do so because of the different form of creativity it offers.

To make music fly—to make all human knowledge and creativity fly into completely new and unexpected dimensions—to create unexpected visions of greater beauty and complexity, pushing our imagination further than before—these are what the computer is capable of doing. These are more worthy and compelling ambitions than that of simply performing routine tasks more quickly and cheaply. We need to jettison the idea of the computer as a business machine and instead start to embrace more fully the idea of the computer as a dream engine and extension of our imagination.

Adam Smith, writing at the beginning of the industrial period, saw the division of labour as one of the chief explanations of the apparent difference in wealth between advanced European countries and what he saw as more backward agricultural states. The division of labour, and our assumptions about automation promoting efficiency, are deeply enmeshed in these Enlightenment ideas of the nature of progress.

Our visions of computing are profoundly linked to Enlightenment conceptions of the arc of progress. The computer will free us from repetitive labour, promote education and bring continual growth and prosperity. The Enlightenment vision of progress is a linear one. Our assumptions about the value of computing are closely tied to such a view of progress.

The computer as a dream engine and extension of our imagination

In the wake of climate change, the destruction of the oceans and increasing global inequalities, does the optimistic Enlightenment view of progress still hold? Maybe we want to think about other shapes in imaging history and the future. Our view of history remains dominated by Europe which presents itself as the apotheosis of human achievement—a process Jack Goody has called 'the theft of history'. That needs changing, and we need to decolonise history. In breaking away from Enlightenment historical models, China, India and Africa all offer potential alternative perspectives. And we can turn to other historical periods—how did Babylonia engage with the emergence of writing? How do the middle ages suggest alternative approaches to the division of labour?

We must embrace the beauty and excitement of the networked computer for its own sake and explore how this all-purpose machine can reshape and reignite our imaginations. But for this to be successful, it needs to be a process which breaks away from commercial constraints. This means abandoning cost and efficiency as yardsticks for computerisation. Forget management life cycles; think instead of tinkering, experimenting, wrangling and failing (best of all, failing expensively). Don't get Google or Microsoft to run your corporate systems; build and run them yourselves.

This is another reason why the fight for the health of the internet is so important. A healthy internet means an untrammelled human imagination.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IV. *Community Learning at Dynamicland*

Paula Te

Paula Te is a designer and engineer at Dynamicland, a community space and research lab in Oakland, California. Dynamicland is working on a new kind of computer – a communal computer, designed for agency, where people can think like whole humans. We asked Paula to tell us how she's making tangible interfaces for collaborative learning.

The computer of the future is not a product, but a place.

Illustratation by Flexn

I argue that the future of computation must usher in a future of equity. As someone whose perspective as a non-white non-male has always been underrepresented, my goal is to empower those who aren't represented by dominant culture to be a part of inventing new mediums. This goal is very specific to my experiences, but it also overlaps with the mission of the Dynamicland, an Oakland-based community space and research lab. Dynamicland strives to create universal literacy in a dynamic medium, bringing the power to communicate and understand to all people.

However, Dynamicland is not yet inclusive enough to make this a reality. I want to incubate a more inclusive culture of innovation and access to technology. We need to get that right first in order to shape the rest of the work accordingly. I want this work, and the work of creating future mediums, to be influenced by what bell hooks calls "both margin and center."

A FUTURE PLACE OF COMPUTATION

Stepping into Dynamicland today is like stepping into a future space of computation. The current technology is a bunch of projectors and cameras built into the ceiling, leaving humans to interact with each other, with computation serving these interactions, manipulated by ordinary physical objects. Rather than being the focus of the interaction, computation serves these human interactions, and can be manipulated through ordinary physical objects. People come in and ask if it's like AR or VR. Yes, in Dynamicland you can find similarities to current trends in technology. Yet we don't define Dynamicland by the current moment. Our dreams are rooted in historical contexts and past experiences, just as the writer and illustrator Maurice Sendak notes, "Fantasy must have roots ten feet into the ground".

Modern computational tools were first created in America in the 1950s, arising out of the need to create tools for warfare. Technology advanced, became smaller, and with the rise of personal computing in the 1980s, these tools became repurposed into the technology we know today: we now have access to all the information in the world at our fingertips.

This narrative of computation leaves out a few radical ideas from thinkers who wanted to pull the arc of computation in a different direction. Doug Engelbart wanted computers to augment our ability to "improve our tools for improving our tools." Alan Kay wanted to create authoring environments for "powerful ideas". Access to information has its benefits, but we do not have full agency unless we are fluent in this new medium. Dynamicland embraces this alternate arc. Computation at Dynamicland is designed to be continuous with human activity; its purpose is understandability and visibility. Not designed only for the consumption of information, but for a desire to collaborate, create, and understand with others.

Another way of framing Dynamicland is within the longer arc of tools and spaces with which to communicate and think: the arc of media. Spoken word is an age-old temporal, serial medium. The first libraries were spaces meant to preserve static, written or visual mediums. Dynamicland explores a space for a whole new medium to think with the dynamic medium. Futurist

Jake Dunagan refers to research showing that imagining the future happens in the same part of the brain as thinking about the past. Jake claims that by remembering the future, we may be able to replace the past. The future "memories" we come up with reshape our minds and create real hope.

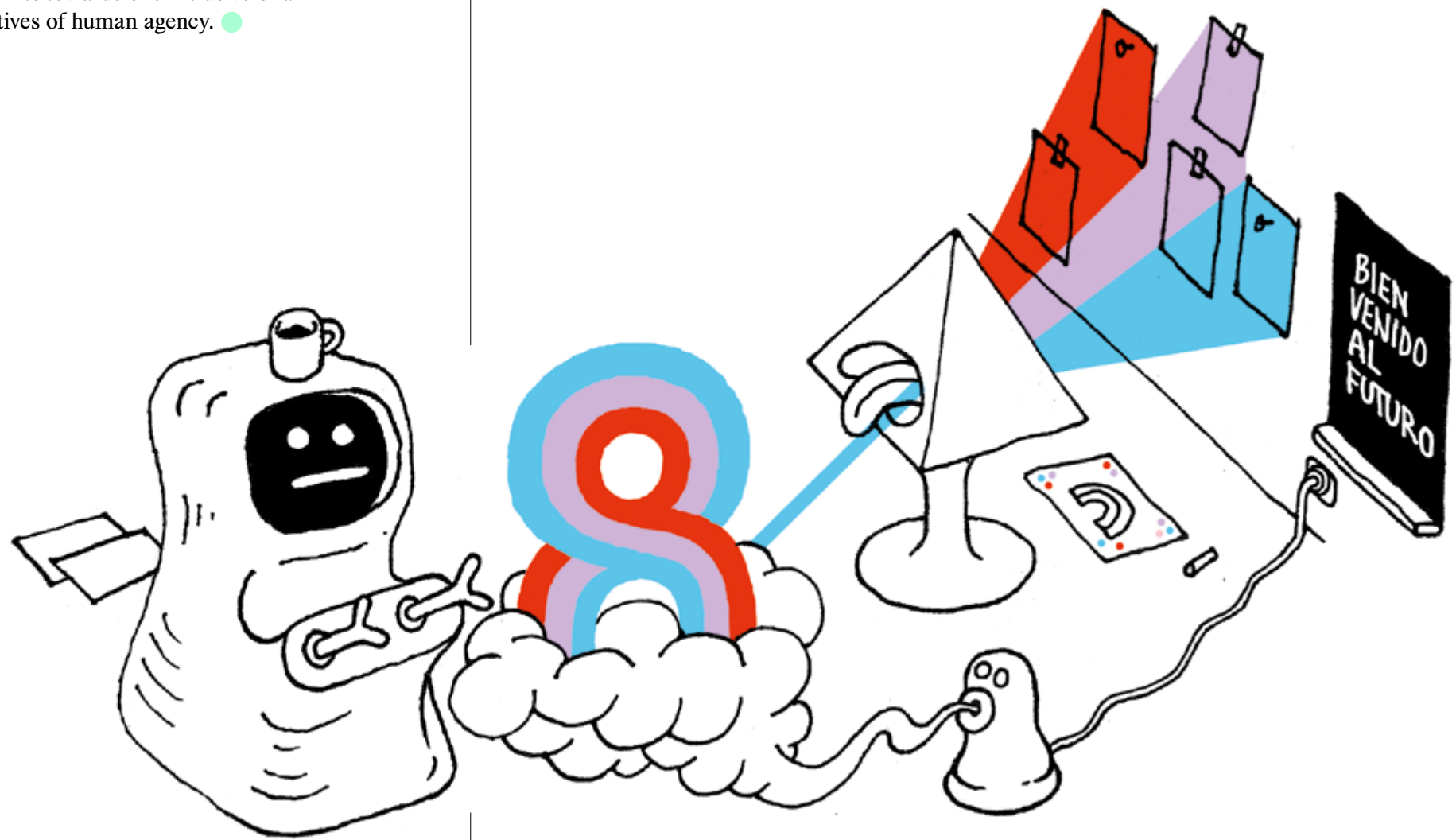
In that spirit, we invite members of the community to join to the space and imagine futures together. There are both tensions and joys to holding a gathering like this. People find joy in thinking about the future in a space that is already, seemingly, from the future. "Are we not already in 2070?" one participant gasped when a projected line appeared as they created a map in Dynamicland.

The tension, however, is that Dynamicland's tools certainly have a learning curve. The space, as welcoming as we try to make it, is still intimidating to some participants. We researchers pride ourselves in the maximal visibility of the system, where each dynamic object has the code it's running printed on it. To others, the code, even with its Inform-7 inspired English sentence language, is daunting. Dynamicland's long-term vision, nestled in the long-term arc of media, aims to use visual, sonic, even embodied modes of programming to create dynamic media—eventually. Today, Dynamicland is the future trying to be created with the present tools at hand. Our growth, both for the research towards creating a humane dynamic media and the people engaging with it, lies in sitting with that tension, and finding ways to bridge the gap between the future dream and the present state. Tech spaces are trying to do this; so are activist spaces; so are learning spaces. Let's bridge this gap together, hybridizing our spaces by bringing cultural, self-reflective, and socio-emotional practices into tech and learning, and by bringing computational and media literacy practices into activism and learning. Most importantly, let's create spaces where there's a desire to have these conversations.

What's next for our gatherings is to prototype, create, and live in our futures, with constant dialogue throughout. Dynamicland is a place where we can start the conversation. But it's also a place where we need a multiplicity of voices to dream of a multiplicity of futures, so that the default future shifts towards one inclusive of all perspectives of human agency.

Paula wrote this essay after facilitating a workshop on the future of learning. You can read more about the format and the discussions in the workshop on our website: https://dingdingding.org/

Special thanks to the co-facilitators Paige Teamey, Lonny Avi Brooks. Thanks to Edomyas, Christine Rachel Joseph, Anushee Sondhi, Aaron Nakai, George Moore, Sonia Spindt, Eli Kosminsky, Claudia & Alejandra, Kena, Jewels, Taheerah, David. Also thanks to Corrina Hui, Thais Laney, Weiwei Hsu, Roshan Vid, Dynamicland community and staff.



V. *Imagining a Universal Declaration of Digital Rights*

Nani Jansen Reventlow

Nani Jansen Reventlow is the Founder and Director of the Digital Freedom Fund. The fund supports partners in Europe to advance digital rights through strategic litigation. We've asked her to give us a glimpse into the future of our digital rights based on a recent workshop she facilitated.

Illustration by Anna Niedhart

In a perfect world, what would you like to be able to say is true about our digital rights five, ten years from now?

With this question, we kicked off a "Future-proofing our digital rights" workshop in Berlin. Together with digital rights experts, campaigners and activists, we imagined a positive future conversation about our digital rights and penned a multitude of statements.

Temporarily switching our focus from the digital rights battles being fought today to the future we want turned out to be an invigorating and inspiring experience; the energy fed into our own imagining of a "Universal Declaration of Digital Rights". From a starting point of how rights are currently protected in our international human rights system, we looked at how these would be interpreted in the future and asked ourselves what would need to be established over the coming years.

The collated document from our collective imagination was a combination of both re-imagined existing rights, such as fair trial rights, focused on algorithmic decision-making, or a right to "understand the implications of technology" as a manifestation of the right to education, and the formulation of new potential rights, such as a right to modify and update devices, the right to interoperability of technologies, and the right to disconnect.

RIGHT TO EDUCATION & LITERACY

— Right to digital literacy
— Right to understand the implications of technology

RIGHT TO PRIVACY

— Freedom from profiling
— Freedom from bulk surveillance
— Right to use strong encryption
— Right to private digital communications

RIGHT TO CHALLLENGE THE ALGORITHM

— Right to algorithmic transparency

POLITICAL PARTICIPATION

— Freedom from online manipulation
— Right to take part in political decision making online

RIGHT TO PERSONAL SAFETY & SECURITY

— Right to digital security
— Right to bodily integrity
— Freedom from cyber bullying, trolling & abuse

RIGHT NOT TO BE PROFILED

— Right to get information about your own data
— Right to keep your personal data protected
— Right to opt-out of profiling
— Right to anonymous access & participation

FREEDOM FROM DISCRIMINATION

— Right not to be discriminated

RIGHT NOT TO BE JUDGED BY A MACHINE

— Right to request a human override to algorithmic justice
— Right to delete the digital self

RIGHT TO DISCONNECT; RIGHT TO REMAIN OFFLINE

— Right to live in a faraday cage from time to time
— Right to non-digital access to government services

RIGHT TO (DIGITAL) SELF-DETERMINATION

— Right to control your own data
— Right to object to the use of personal data
— Freedom to move providers
— Right to challenge / opt-out of standard terms and conditions

RIGHT TO PARTICIPATE IN CULTURAL LIFE OF COMMUNITY

— Right to participate in digital expression
— Freedom to share and receive information
— Right to participate in online communities

VI. *The Future of Democracy*

An interview with Audrey Tang

by Julia Kloiber

Audrey Tang, Digital Minister of Taiwan, is a conservative anarchist, hacker, and animal rights activist. When she joined the Taiwanese cabinet in 2016, Audrey started to implement politics and tools that she had long been working on. We asked her to tell us more about her visions for the future and where she draws her inspiration from.

Dropping out of high school at 15 after finding her textbooks hopelessly outdated, Tang decided to seek her education on the internet instead. There she encountered radical ideas of governance through consensus and transparency. This upbringing on the early web, with its vast pools for information and anarchistic freedom, also coincided with the democratisation of Taiwan, which held its first presidential election in 1996 after decades of martial law and one party rule. It comes to no surprise that internet and democracy, free speech and personal computers are tightly linked for many young Taiwanese of Tang's generation, which was the first in their country to grow up with either.

In 2014, this generation took to the Legislative Yuan, the seat of Taiwan's legislative branch, to oppose a secret deal with the People's Republic of China. This peaceful occupation of the Sunflower Movement led to a more open and inclusive government after many of the occupiers and their civic tech supporters, like Tang, joined the government as mentors and advisors.

As Digital Minister, Audrey Tang continued to push for an open government of social innovation and citizen participation. Together with her team, she developed Join, a platform on which millions of stakeholders can discuss political issues and host and debate online petitions. Tang hopes that by engaging with and listening to different ideas in public discourse, Join's users will be immune to divisive PR campaigns that seek to throw a wrench into civil discourse.

Join, like all of Tang's projects, embodies the ceaseless optimism of the early web. Her projects are shaping the future of democracy and serve as inspiration for governments and communities around the world. Audrey Tang's goal for an inclusive and transparent society was made apparent when she, when asked for a brief job description, instead replied with a poem:

When we see an internet of things
let's make it an internet of beings

When we see virtual reality
let's make it a shared reality

When we see machine learning
let's make it collaborative learning

When we see user experience
let's make it about human experience

And whenever we hear that a singularity
is near let's always remember
that plurality is here.

Image: Audrey Tang

JULIA KLOIBER:
I love this poem, it is such a great summary of your values. What is it inspired by?

AUDREY TANG
I wrote the poem when I was in New Zealand. I was attending a conference on open source and open society. I drew inspiration from the Maori people. Their chants link to the Taiwanese Austronesian people who sailed the seas four thousand years ago and spread their culture. The indigenous nations of Taiwan are of a great inspiration to me. New tech enables all living beings to speak through data and numbers — people can empathize not just with other humans, but with the wider ecosystem with which our lives are deeply intertwined.

JK:
We are exploring different futures in this magazine. What is your most radical vision for the future of democracy and society?

AT:
My vision for the future is a plurality-based ecological democracy. But before reaching for that far future, I would like to say that we first need to solve for the near term. Like by year 2030, we need to use the resources on earth sustainably. We can't burn through more than one earth year per earth year. This is very important.

As the minister in charge of social innovation, I want to make sure everybody knows about the importance of sustainability across all the sectors. We can list what every organisation in our society is doing in terms of the Sustainable Development Goals index. That way people can discover each other, work towards common goals and form spontaneous partnerships. Partnership is how we're going to reach those goals.

JK:
A plurality-based ecological democracy sounds great! Can you tell us a little about how you're working towards this future. Are there any specific challenges to overcome?

AT:
Our main challenge is that we are a very new democracy. Although we have perhaps the most open and innovative society in all of Asia, our first presidential election was only 30 years ago. We've had to figure out democracy after three decades of military law and dictatorship. Democracy in Taiwan is as old as the World Wide Web.

People younger than me can't remember the martial law—they think of things naturally in the collaborative way of open access. But people who are my age or older, who are digital and democracy migrants, have to reshape our thinking. We have to reconcile a highly hierarchical authoritarian culture and language with of a reality that is a horizontal, people-powered democracy. We have to move beyond the authoritarian way. This is the reason why social innovation is innovation *with* people, not *for* people.

JK:
Democracy in Taiwan is young, yet very vibrant. The challenge with hierarchical structures sounds very familiar—we can see that in governments around the world. How are you breaking the silos and paving the way for an innovation with the people?

AT:
My theory of change has three pillars:

1. Location independence—I can choose when and where to work;
2. Voluntary association—I don't give or take orders;
3. Radical transparency—I don't touch state secrets and I publish full transcripts or videos of meetings on the internet.

Taken together, these tools are a kind of virtual reality that enable people to understand what it's like to be a digital minister.

My office, which is part of the location independence plan, is a social innovation lab. We placed twelve different ministries into this shared workplace. It creates a social infrastructure that breaks silos, and that's where new thoughts and ideas emerge. It's a co-created social infrastructure with a cafe, a kitchen and a chef that opens until late every night. I sit there and listen to people every Wednesday for twelve hours. This infrastructure and social fabric makes innovation not just possible but also fun. Optimize for fun!

JK:

That sounds like a very welcoming environment :) You've been working on many progressive deliberation and participation projects. What tools or methodologies are you using for the co-creation processes in your work with the social innovation lab? Is there anything you are particularly excited about?

AT:

At the moment, I am most excited about this idea of a sandbox. It allows innovators to test their suggested improvements for a law or regulation in a real place, like a playground, a municipal space, a rural space an indigenous space. Once people have experienced social innovation first hand, they are much more likely to get involved. If the idea is not a good fit, everybody learns from the data sharing ideas and open innovation ethics. If it works, then there are new ethics and norms. For example, how can the parameters of an AI be made more humane and privacy enhancing? We test and then turn those insights into our legislations. Then we don't regulate something we don't have first hand experience with. And we can collaborate with social innovators in a way to the benefit of the common good.

JK:

I know that you are an optimist – that is something that resonates in all of your answers. But is there anything you are worried about when you think of the future of democracy?

AT:

I would worry if people stopped visiting me during my office hours in social innovation lab. I would worry if I toured around Taiwan every week and the social innovators refused to talk to one another. I would worry if people distrusted the internet so much so that they would not be willing to participate in any communication, even if it had end-to-end encryption. In short, I would worry if plurality disintegrated into small filter bubbles. I think that this is our main threat now. It is not a single person; it is not an ideology. It is just the lack of care—and the lack of being deeply listened to—that threatens plurality and the current democracy.

Image of Yonghe District, Taiwan

JK:

You've been working with indigenous language communities, you advocate for animal rights, you went through two different puberties – you say an overarching theme of your personal journey is intersectionality. What do you think needs to happen to get more diverse groups involved in decision making processes? How can society benefit from intersectionality?

AT:

Intersectionality reminds us that we all have some part of us that is vulnerable, that has suffered from social injustice, and that is in the minority. Through these painful experiences, we can emerge with an authentic voice and listen to people who are suffering for a different reason yet feel the same pain. When individual voices can represent themselves authentically, that helps us rethink our own experiences of vulnerability. As far as I know, empowering people who are suffering is the best way to to scale listening among disintegrating pluralities and to safeguard democracy.

JK:

Beautifully said! Here's my last question: When you think of the long term future, what topics do you perceive as important related to society? If you were free to choose, what would you be spending your time working on?

AT:

Well, I joined the cabinet to work *with*, and not *for*, the government, by my own choosing. So if given the choice again, I would still work on what I am now: Knowledge sharing and cooperation for access to science, technology and innovation. Early open innovation can decolonise the technological regimes that people are currently using. It's through open innovation that we can ensure public access to information and protect our fundamental freedoms—not just offline but also online and in mixed reality. And it's through open innovation that we can ensure responsive, inclusive and also representational decision making so that the government truly is with the people not for the people.

VII. *Dream Beyond the Wounds*

adrienne
maree brown

adrienne maree brown is a writer, social justice facilitator, pleasure activist, healer and doula living in Detroit. She is the author of 'Emergent Strategy: Shaping Change, Changing Worlds' and co-editor of 'Octavia's Brood: Science Fiction from Social Justice Movements'. She uses science fiction as a tool for community organizing—motivating groups of people to articulate and work towards more positive futures.

I once had a dream that woke me up. It was several members of my Detroit community crying together. There was a huge sense of loss, like real take-your-breath-away grief, but there was also a feeling of comfort and togetherness. This dream has led to a draft novel about grief in Detroit. It's also led to a commitment to conduct trainings in Detroit for generative somatics, a sensation-based movement practice for relieving trauma and advancing social justice. That way, more people could feel more of themselves, of our shared grief, of our potential for healing and shaping the future. It's been incredible to be in a community that is deepening together.

illustrations by Anna Niedhart

This small blue sphere is spinning, while orbiting a ball of fire, in a galaxy that's constantly changing, in a universe thick with galaxies. The atmosphere is beautiful and complex. We have jaw dropping mountains and incomprehensible oceans, prairies, deserts. It's a miraculous, robust home. And we are destroying our relationship with home.

We are a species that has been gifted an abundant earth and the ability to orgasm, but we mostly fight and lie and ignore beauty. We choose to follow the rules, to follow tweets of people who hate us. We choose to quibble over strategies that we already know intimately, in all possible potential and limitation. We are barely surviving, and always dying, in a world shaped by shortsighted imaginations.

Imagination is always changing too, getting wider, pushed open. Getting narrow with edges of fear and ego. Sometimes people who are scared that they aren't enough become convinced that they can only be big if others are made small. They fill their imaginations with walls and borders, differences and projections. We currently live at an intersection of small minded white men who place gaining over sustaining, and those who can't bear the weight of the miraculous and are willing to hand over their power and freedom in exchange for any kind of approval.

In so many ways, we're not surviving. We are dying. We are dying alone in prisons, dying as the climate changes all around us. Dying by accidental shooting. Dying of exhaustion. Dying because we can't do it anymore, can't see tomorrow anymore.

We have the gift and responsibility to imagine.

This crisis is not happening to us. It is happening because of us and with our complicity, fueled by our belief that we are victims, that someone else is responsible. We have to reclaim the sacred ground from which the world is made—our imaginations. There is a part of each of us that can see beyond what exists. As children we see so much before we are taught to see everything in boxes and binaries. We have the gift and responsibility to imagine.

And yes, this is a dark age. And a darkness such as this is the perfect setting for our dreams. Visionary fiction is a way to shape dreams of justice—to understand that art is not neutral, that what we dream and create is a practice ground for the futures we need.

Here's what to practice:

Take your dreams seriously. Your daydreams during meetings, the messages you gather from your night dreams. Ideas come together in nonlinear ways, and dreams are a crucial space for seeing the intersections where magic can happen. Look at what's happening now as an iteration, as a cycle of experimentation. Learn the lessons and let that learning shift your next steps.

Find the wounded places in your community, where thinking and action are stagnant—bring the medicine of imagination.

Time travel for perspective. How did earlier generations move through similar challenges with less communications? When you project forward a decade or two, what positive change can you forecast? How would it happen? What strategies would it require?

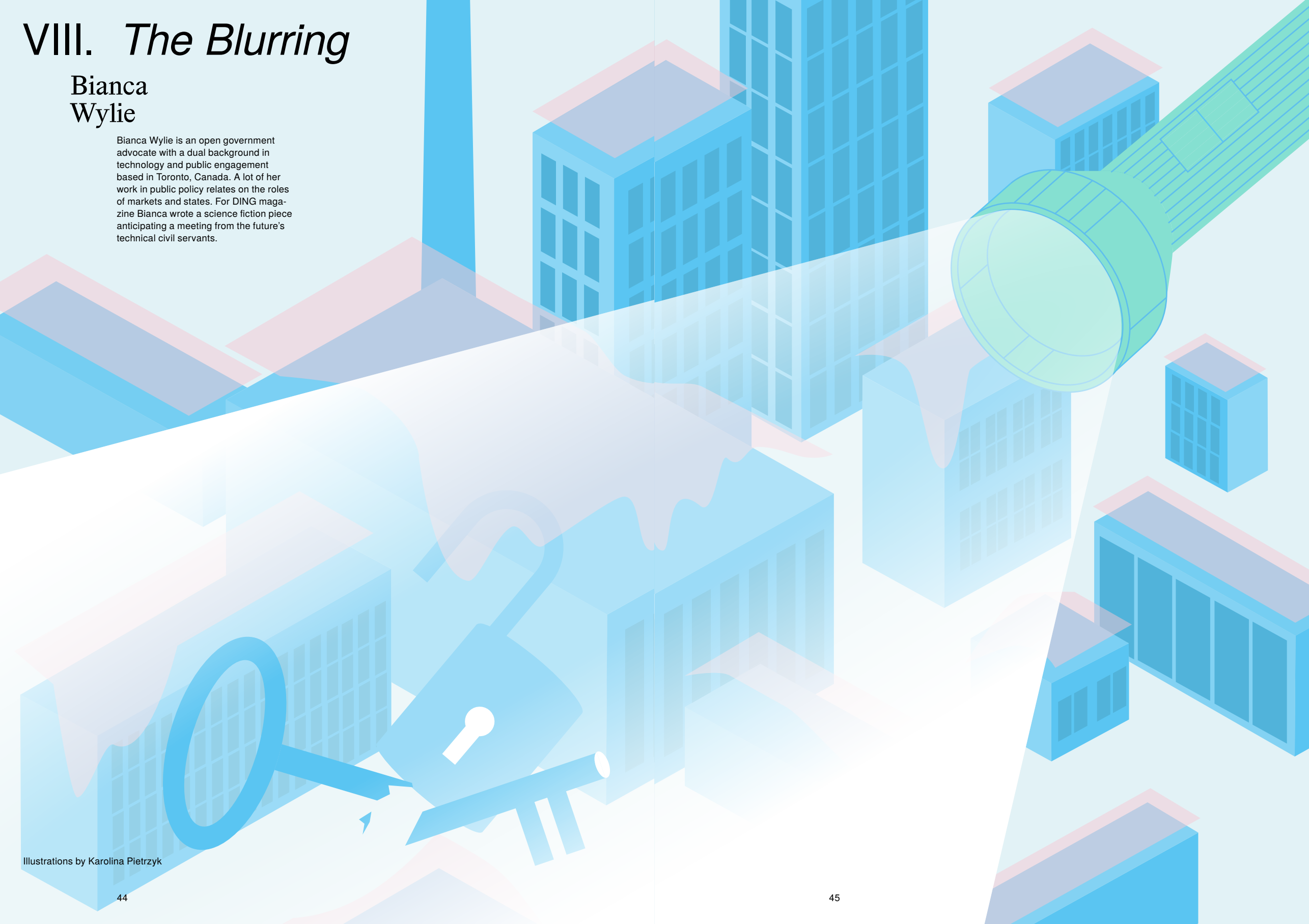
Write with others. Generate worlds together and write many paths through them. Let the writing be a place to explore tensions, play with difference, and create something better than any individual could imagine.

Find the wounded places in your community, where thinking and action are stagnant—bring the medicine of imagination.

VIII. *The Blurring*

Bianca Wylie

Bianca Wylie is an open government advocate with a dual background in technology and public engagement based in Toronto, Canada. A lot of her work in public policy relates on the roles of markets and states. For DING magazine Bianca wrote a science fiction piece anticipating a meeting from the future's technical civil servants.



Illustrations by Karolina Pietrzyk

Martha wheeled up the ramp. She pulled the wobbly chalkboard up from the back of the stage and started drawing the rough outline of a system map.

"Hello everyone, thanks for coming out tonight—it's nasty out there." The church was dimly lit. People shifted in their seats and opened their computers.

The rage in the technical civil service had been building for decades. Poor decisions by public sector union leadership had rendered their collective power impotent. For any number of inexcusable reasons they were unwilling to throw their weight around in the fight for the city.

A big part of this fight was keeping the data lines clear and the inputs to services straight. The data was leaking faster and faster—getting muddled and messy. It had created a governance landscape perfectly set up for corporate takeover.

Many traced it back to the AI boom when the pressure went up to unlock the great vaults of data. Politicians were at the gates, waving the keys to the city around.

2020 finally brought some relief. Mass retirement threw the technical house into disarray. The inside team quadrupled in size. The outside team knew where to push.

As Martha kept sketching Rania spoke:

"As of today, communications order 713, also known as 'memo to convince outsiders of government technical incompetence' is of highest priority. Any opportunities made available to you to speak about smart cities, civic tech, open data, big data, and more should be accepted and prioritized. Marvel can assist with updated talking points."

Marvel stood up and waved. She'd been holding the pen for almost three years, the central figure in convincing the public and the politicians that the third and final phase of the plan they were about to execute was impossible.

Martha continued drawing. Ginnie rose and made her way to board, describing how the new architecture they were implementing effectively broke recently mandated efforts to profile and means test welfare recipients.

She called on Penny from the regional government and Lara from the national government to explain how the systems would interact and how the new automated decisions would be defended.

The new procurement requirements they had put in place years earlier had ensured this was all possible. The vendors would be kept busy with dashboard and user experience updates and upgrades. The skinning of the systems was an absolute pig of an initiative and hadn't stopped feeding the vendors so the outcry over the work being done in-house was minimal.

Rania continued: "Now in terms of "strategic order 473 "consultant time burners, the main topic this year appears to be "change management redux" (I think this is version six) and two side orders, one of agile, one of machine learning. Comply with their activities and ask as many questions as possible. Keep them fed."

Martha had finished her schematic. It was a bare bones drawing, but one that did not exist formally at the city. At best it lived in rows on a spreadsheet and in the minds of those tasked with maintaining it.

As the outside team scribbled their notes Rania identified the core planks of the third phase of the plan. It was mostly subversion and human resources work, how to manage the people left after the massive wave of retirement. But there was one technical thread about the hardware and sensors.

Mori joined Rania and flipped the chalkboard over, starting to outline what the outside team had assembled as the component parts for the sensor swap-outs.

The existing sensor systems had been shoddily installed and maintenance had been foisted on the city. Procurement redesign made sure contracts had included a clause to allow government replacement of the hardware.

Now that the data had been breached there was no reason not to pull the trigger on the swap. The hardware was dirt cheap. No one expected the government to take over the infrastructure given to them for "free" but the business case was easy to explain.

They wrapped up. Laptops snapped shut. Rania squinted out at the room. Nothing felt like victory. It all felt like an absurd undertaking to get some basic controls back. Nobody was excited. Mostly they were tired.

Lenny opened the door and people started filing out into the cold.

Sanfa dragged a chair outside and lit a cigarette. "This isn't the work. I mean, it's important but..."

Lenny looked down: "I know".

She exhaled. "How could people forget how many of us exist? What an accomplishment. When the public service disappears no one will complain, no one will even know what it was at this rate." She flicked the cigarette butt and pulled the chair back in. He followed. They sat in silence and stared at their breath. They could hold off the worst of it but not for much longer.

"If the political leadership doesn't..." her voice trailed off. "If they automate what's here then....". They started to stack the chairs.

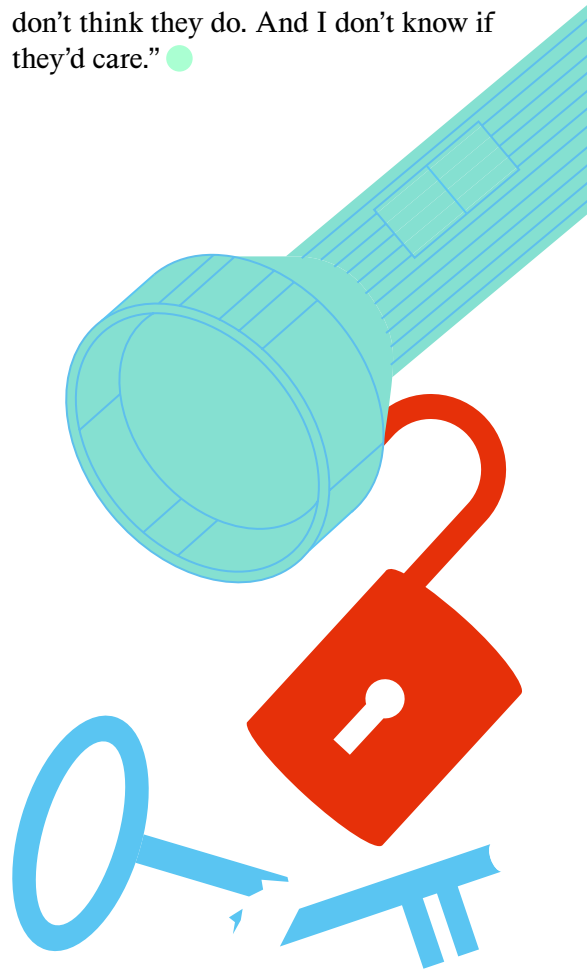
"Did you see the new integrated city services login? Sanfa asked. "The one where you can order last-mile transit or library holds?"

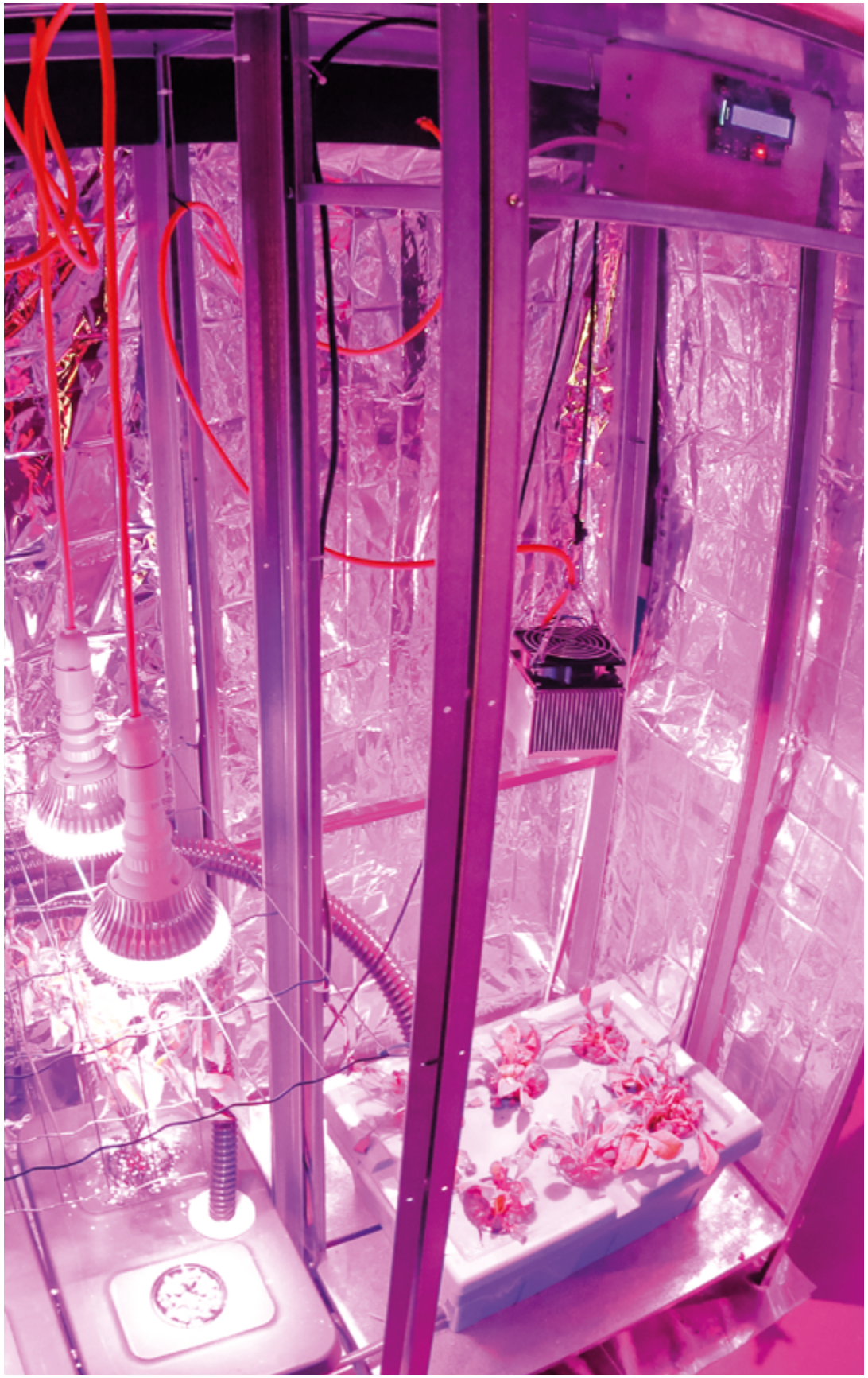
"I did—my dad asked me to help him with it." Lenny jammed another set of chairs under the stage.

More silence.

"Do they know it's not the government?" she wondered.

He shoved the chair drawer shut. "I don't think they do. And I don't know if they'd care."

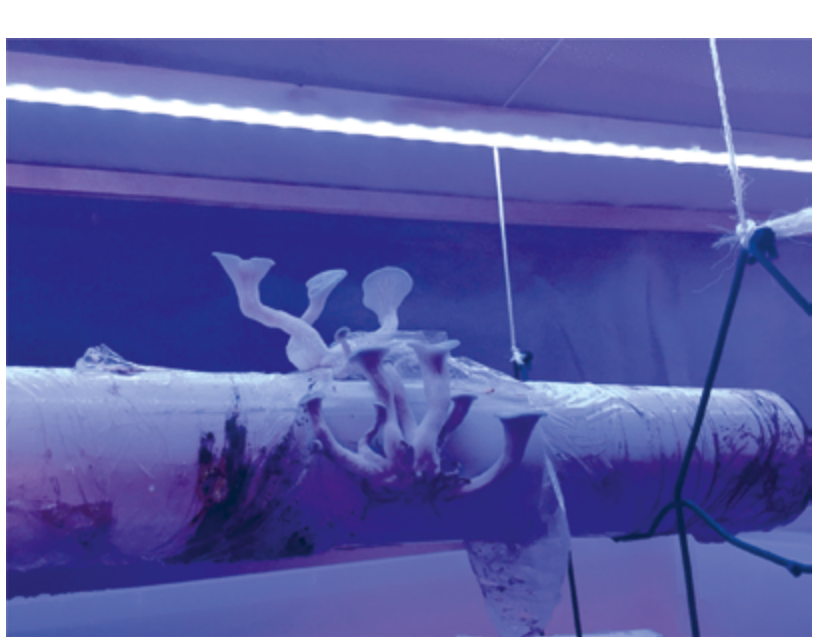




IX. *More than Human-Centered Design*

Anab Jain

Anab Jain runs the design studio Superflux together with her partner, Jon Ardern. They create possible futures, stories and tools that provoke and inspire engagement with change and uncertainty. We asked Anab to reflect on the concept of “more than human centered design”. She talks about how her understanding of the world was transformed by a newfound love for growing mushrooms.



Images from the installation “Mitigation of Shock” by Superflux

Perhaps the best, or maybe worst, place to start is by exposing my greatest fear.

I am scared of death. But not as scared as I used to be. From around the age of 10 to my early teens I collected, in the archive of my head, hundreds of my imagined deaths. Traveling in the train through the dark Indian desert, I would imagine being shot from somewhere far out in the distance. Or rushing through chaotic Ahmedabad traffic I would imagine the railway bridge falling on me. Even though it would have been easy enough, I resisted the lure of religious spirituality—and instead found my spiritual home in cinema. It is from this that I look to the future. A future that, when my son is my age, will be incredibly worrying.

Based on the current global projections for both the massive increase in human population and the huge decrease in available land to feed them from, we worked on a project exploring a future where the Western world has moved from abundance to scarcity. We imagined living in a future city with repeated flooding, periods with almost no food in supermarkets, economic instabilities, broken supply chains. We asked ourselves, what can we do to not just survive, but prosper in such a world? What food can we eat? This inquiry became the basis of our installation 'Mitigation of Shock' commissioned by CCCB Barcelona and curated by José Luis de Vincente.

The installation transports you to a London flat, perhaps in the year 2050 or so—when my son might be around our age. At first glance, you're in a seemingly comfortable living space designed for a world of automated living, global trade and material abundance. Then on closer inspection, you realise the apartment has been adapted to a future it was never meant to inhabit. Discarded newspapers and a radio show reflect the tensions of this new world; recipes in the kitchen reveal the change in food production, storage, and consumption. Experimental food production occupies space once given to relaxation—transforming the apartment into a space for growing and producing food. Towering silver stacks of mushrooms, cabbages and chili plants flourish in an optimally lit indoor environment.

As part of the installation, Jon built a food computer from scratch—something he hadn't done before. We used the soil-free, nutrient-enriched water vapour technique of fogponics to grow things quickly. We wanted to build them in the cheapest way possible: from salvaged, abandoned and repurposed materials. Turning today's waste into tomorrow's dinner.

One of the things that I found incredibly fascinating was the growth of the humble mushroom—this mycelium we tried to grow in so many ways. We used Arduinos and ultrasonic fog to control the humidity in the DIY polythene-clad box that had become our fruiting chamber. For a while nothing much happened. Then suddenly it began to find its right environment,

or rather our human activities and disturbances, both planned and unplanned, had created the optimum conditions for it to grow. Eventually it grew into this beautiful brightly coloured and quite delicious form. This direct experience drew us into the world of many interacting species. It provided a useful vantage point for knowing ourselves as participants in more complex human and non-human relationships.

This inspired me to think of a bigger picture, and instead of the established "user-centred design" narrative so loved by technology companies and design schools alike, I considered a "more-than-human" centred approach. Where humans beings are not at the centre of the universe and the centre of everything. Where we consider ourselves as deeply entangled in relationships with other species and non-human entities.

Our profession, and those we serve after a long time, finally have come around to the idea of human-centred design, which is important for many reasons, especially when designing for diverse users and communities. But, in a broader context, as multi species anthropologist Anne Galloway writes: "what if we deny that human beings are exceptional? What if we stop speaking and listening only to ourselves?"

Galloway continues, "Complementary ways of thinking, doing, and making emphasise the practice of care and imagination and challenge us to work with, not against, vulnerability, humility and interdependence." Interdependence is a powerful concept for me: different participants—human and non-human—are emotionally, economically, ecologically or morally interdependent on each other. And this reliance is acknowledged. I think this perspective is something that would be very meaningful for many of us to consider—whether we're interaction, service, or UX designers, entrepreneurs, researchers or people who put things out in the world for others "to use".

Apart from climate change, another reason to consider this form of interdependence is much closer to home. Today, we are already living amidst other kinds of non-human entities, increasingly autonomous things and systems that are very seductive. But beneath the gloss of technological utopia, it is becoming obvious how these computers, tools and machines that we have created in order to master the world are re-mastering us: our politics, the way we relate to each other and the world around us.

We don't exist in isolation. We never have. Now we are entering a time where we can no longer live in the illusion of isolation; we can either embrace this new understanding and work with its implications or face the hubris of our inaction.

I want to conclude with a call to arms, a call to closely consider our relationships (both human and non-human) with the world within which we live and work. A call to consider ourselves in relationship with, not as masters of, the deeper ecology around and within us. And to embody this in our actions.

I will leave you with this quote by the 16th century philosopher Miyamoto Musashi: Think lightly of yourself and deeply of the world.

X. *The Unpredictable Things*

Iohanna Nicenboim

In collaboration with Daniel Suarez and scientists from the Royal Netherlands Institute for Sea Research.

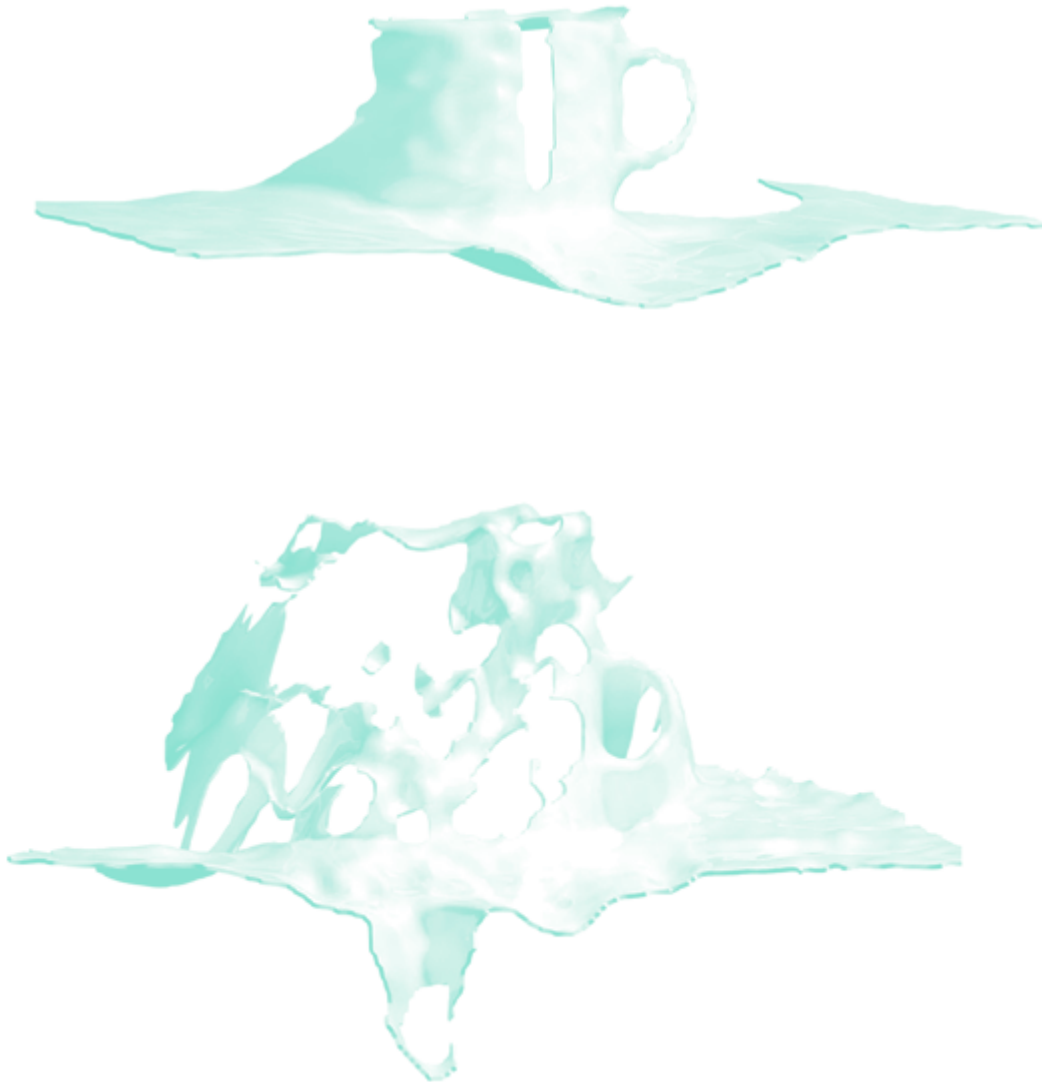
Iohanna Nicenboim is a designer and researcher at the Connected Everyday Lab in TU Delft and a ThingsCon fellow. She focuses on artificial intelligence and IoT through design fictions to highlight social and ethical issues of technology. She introduces us to her latest project about privacy in the home, Unpredictable Things.

How can we co-design with non-humans to imagine alternative future narratives? How could everyday objects and living organisms help us remain anonymous in a constantly surveilled home?

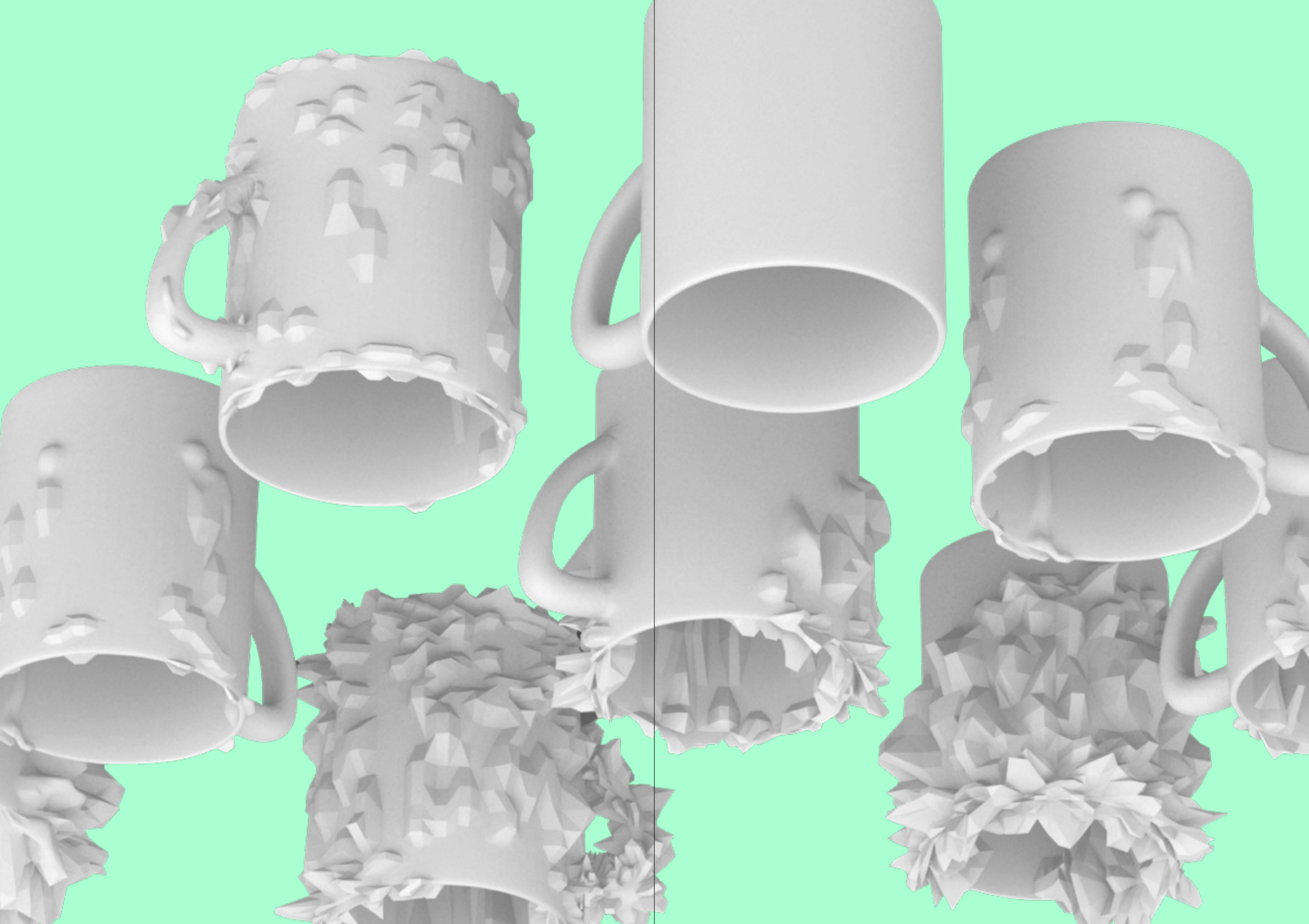
Unpredictable Things explores how to protect our privacy at home by thwarting computer vision through unpredictability and diversity. The project explores invisibility and creates awareness of the need for anonymity. At the same time, it asks what it means to be visible today by highlighting the risk of 'mass producing' our behaviour to comply with algorithmic recognition.

Unpredictable Things started as an experiment on trying to make everyday objects invisible to object recognition systems. Together with the architect and researcher Daniel Suarez, we started experimenting with a Kinekt camera in a workshop organized by the Everyday Futures Network in the Netherlands.

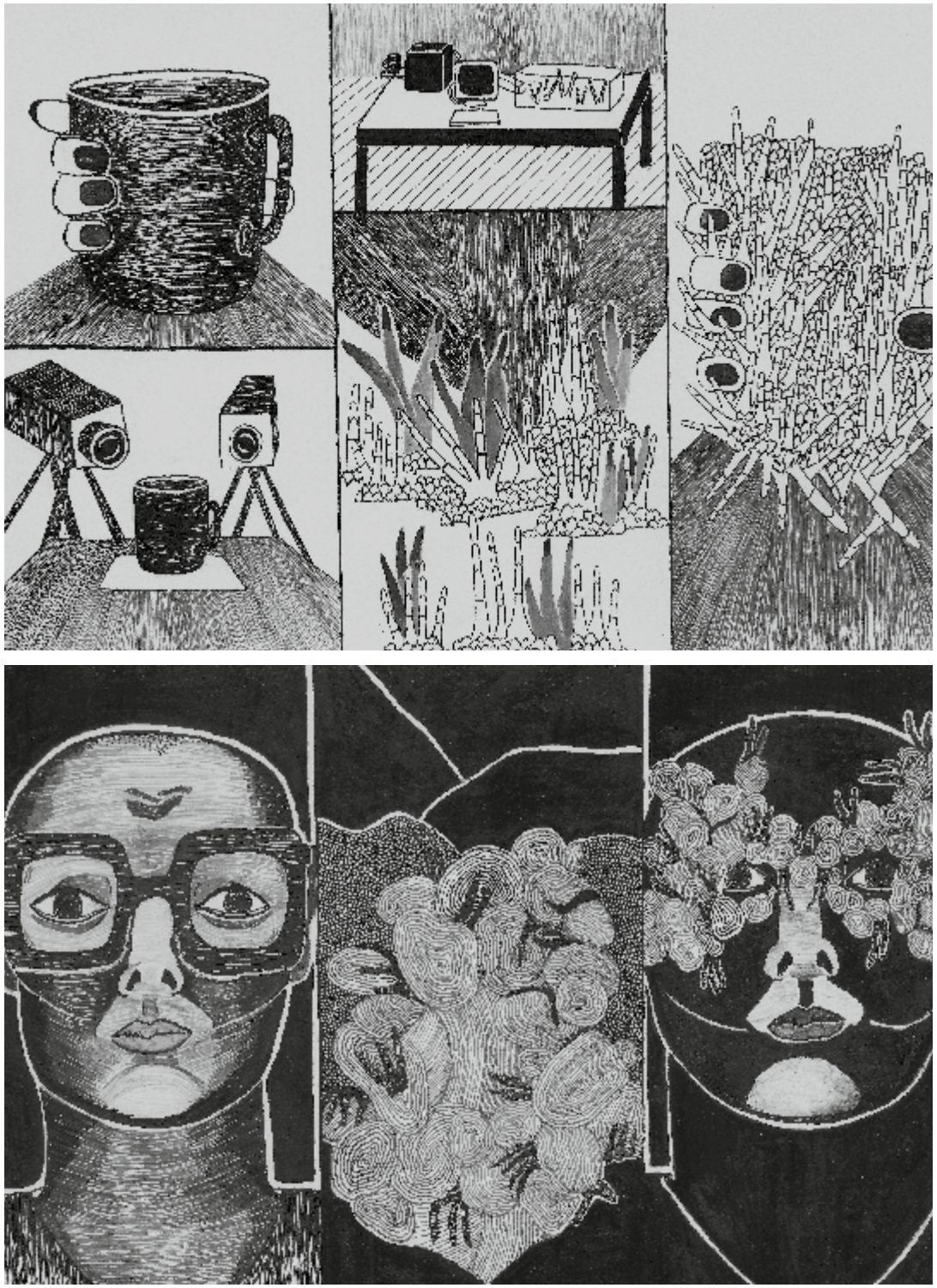
We explored different materials that create occlusions and crafted objects with reflective materials invisible for the camera. We found that diversity had an immense adversarial potential against computer vision systems, since they are trained to see conventional and mass-produced shapes. This means that every shape significantly out of the ordinary becomes unrecognizable.



Based on our initial exploration, we conceptualised a speculative scenario in which a virus could affect digital fabrication codes to make every object unique in its shape, in order to avoid being easily tracked by object recognition systems. (next page)



In a later step, together with a group of scientists from the Royal Netherlands Institute for Sea Research, we explored how we could achieve randomness and constant change by letting living organisms modify the shapes and texture of everyday objects.



We conceived a scenario in which objects would be continuously co-designed by living organisms that grow in highly unpredictable socio-technical ecosystems. These eco-systems would connect the physical environmental conditions with digital variables – such as light exposure with wifi signals.

XI. *When the Path We Walked Blocks Our Ways Forward*

Mushon Zer-Aviv

Mushon Zer-Aviv is a designer, an educator and a media activist based in Tel Aviv, Israel. His work and writing explore the boundaries of interface and the biases of techno-culture as they are redrawn through politics, design and networks. In recent collaborations with Utopia Festival and Re:Publica conference he explored possible futures inspired by science fiction and aimed at political change and public policy in light of new technological developments. We asked him to explore how we can cancel the apocalypse.

Futurists and prediction algorithms have de-skilled our political imagination. It is time to think beyond techno-determinism, dystopia or mere resistance. It is time to speak of futures, plural. It is time to cancel the apocalypse.

We are presently thinking about the future.

We seldom notice this, but most of our discussions of the past are future-oriented. We tend to our roots to assure our future growth. Practically, there's no actual use for us to care even one bit about our past if it doesn't inform our future. So it is quite clear why we obsessively document the past and why we invest so much in finding new ways to analyze it and to extract new insights towards the future. The unknown that lies ahead terrifies us; we want to eliminate this ambiguity. We want to predict the future. Now, we believe we might have finally found the right technology.

Data science and prediction algorithms are an exciting field in our long journey to uncover the future, but none of this is truly new. If the past teaches us anything, it is that every culture tried to expose the secrets that lie beyond the cliff of the present. Greek mythology protagonists consulted the Oracle of Delphi, the bearer of prophecy, to reveal what their destiny held. A recurring Greek tragedy trope pit these protagonists against their predetermined destiny. As they do anything in their power to disarm the prophecy, their action lead directly to its fulfillment. They did not willingly act towards fulfilling the prophecy; in fact, destiny is described as a predetermined narrative to which resistance is futile. Hence the self-fulfilling prophecy—a single, determinist, irreversible future—the past that is about to happen whether we like it or not.

Today we don't follow myths. We want data to inform our decision making, to halt the rise of filter bubbles, fake news and climate denialism. We want a political debate that is based on facts, on an agreeable, rational common-ground, and on a shared understanding of the world around us.

ANOTHER WORLD IS UNLIKELY

Prediction algorithms are our modern-day oracles; they extrapolate patterns and trends from the past into the future. In recent years we've seen this scientific approach to future-gazing spread as the true religion of the Liberal Left. Whether the Hilary Clinton campaign and its rational tone and policy, or the "Remain" campaign against Brexit. Both were rooting for passivity, for maintaining the status quo.

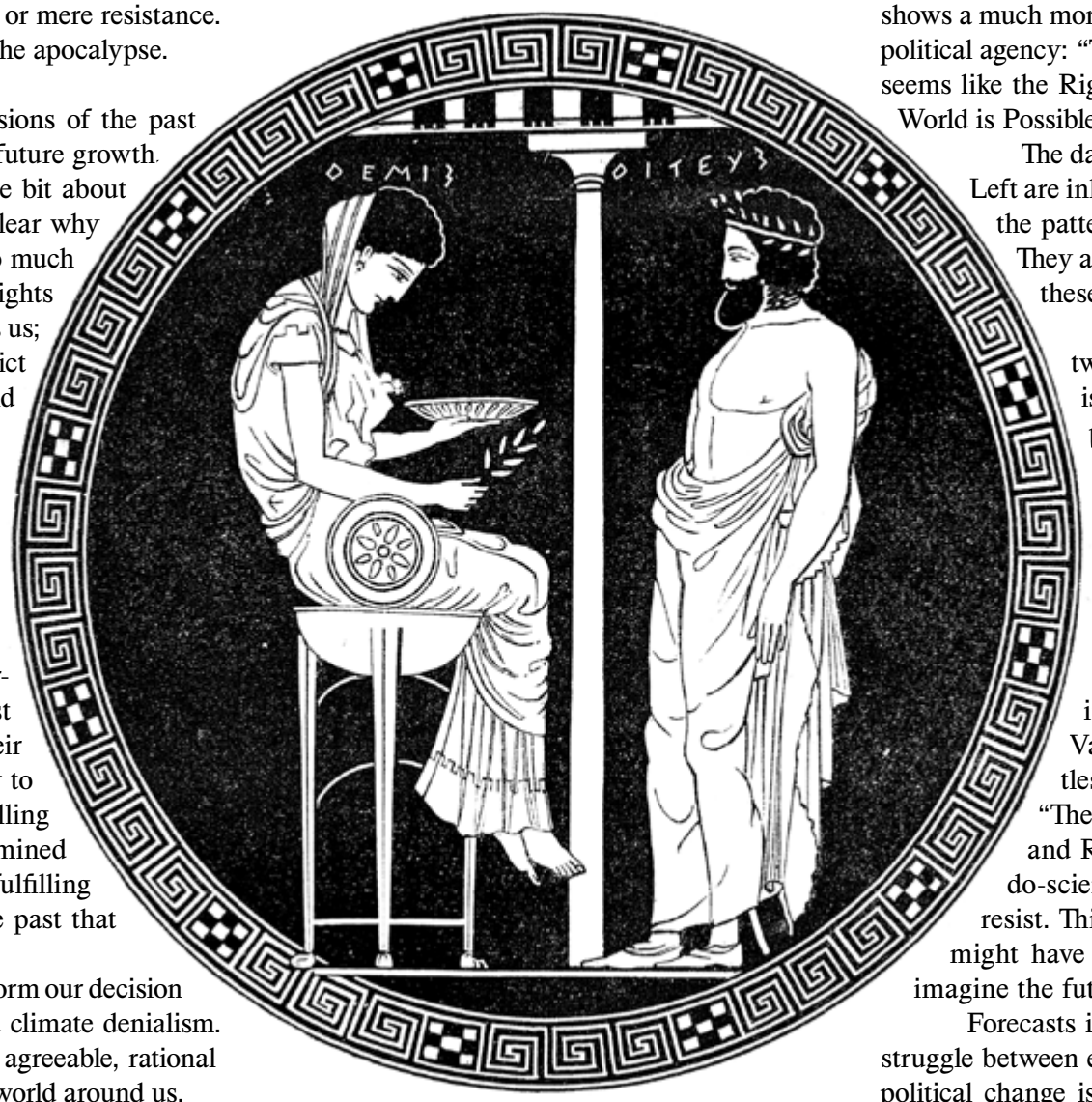


Image: Themis, as the prototype of the Pythia, seated on the Delphic tripod, consulted by Aigeus

Examining the rhetoric on the opposing Conservative campaigns shows a much more active and empowering tone, committed to change and political agency: "Take Back Control" or "Make America Great Again"... It seems like the Right have embraced the progressive slogan that "Another World is Possible". Or in other words: "Fuck the Status Quo!"

The data-driven predictions so eagerly embraced by the Liberal Left are inherently conservative. They are based on the premise that the patterns and trends of the past will continue into the future. They assume that history will simply repeat itself. According to these predictions, "Another World" is simply unlikely.

British and American voters have been trapped between two options: Status-Quo or Reactionism. But this is a false dichotomy between two inherently conservative philosophies. The first uses science and prediction algorithms to suppress change, and the second resists the status quo not through a vision for the future, but through an idealized vision of the past.

YOUR FUTURE IN A BLACK BOX

Futurists have become thought leaders in an intellectual world increasingly dominated by Silicon Valley's brand of techno-cultural change. With book titles like "The Inevitable", "What Technology Wants" or "The Singularity is Near", tech-intellectuals like Kevin Kelly and Ray Kurzweil have been dishing business-friendly pseudo-scientific models for inevitable futures that we simply can't resist. This brand of techno-determinism powered by economics might have monopolized not only the economy, but the right to imagine the future itself.

Forecasts inspired by algorithmic prediction define the future as a struggle between efficiency and agency. They are built on the premise that political change is statistically unlikely. The stable and therefore predictable status of the system becomes not only a prerequisite for algorithmic prediction but a condition to maintain. The more we're dependent on prediction algorithms, the more we stand to lose from changing the status quo. Therefore most policy insights extracted from these models will attempt to suppress the uncertainty of political change and prefer repeating patterns from the past.

Algorithmic Neural Networks, today's leading frameworks for artificial intelligence, are inspired by the little we know about how neural networks work in biological organisms. One of the biggest breakthroughs of

this technology has been the realization that we don't actually need to know how these artificial brains think to have them identify and even recreate precise patterns.

They eat data, find correlations, identify patterns and then spit knowledge. They allow us to outsource excess cognitive processes. As soon as they take over we can allow ourselves to forget how to do the job we just taught them. These frameworks perform best when run in an unsupervised mode. But this means they become mostly model-less black boxes, which limits our ability to scrutinize their actions and conclusions. We no longer remember phone numbers; that's probably not such a big loss. We may soon no longer need to know how to drive; arguably a good thing too. My main concern with prediction algorithms is the de-skilling of our political imagination. We are forgetting how to imagine the future.

Data-driven algorithmic keys can only open doors they have previously encountered. Paradoxically, the mere fact we depend on these keys creates new conditions and hence we have no data to act upon. Information overload, filter bubbles, post-truth, faceless nihilistic trolling, online surveillance, the rise of multinational networked corporations and the challenge to state regulations, even the rapid refugee crisis and the looming climate catastrophe... if we don't have existing data to crunch, how will we forecast our way out of this mess?

RESISTING THE FUTURE

It might be strange to argue we are suffering from a deficit of political imagination. Popular culture is obsessed with political speculative fiction. The Black Mirror TV series is a recurring reference for many debates about technology and The Handmaid's Tale has become the political symbol of the #MeToo movement and the fight against the reactionary patriarchy.

There's a race to the bottom to identify the marks of which literary dystopia we're currently living in. Activists raise signs calling "Make Margaret Atwood Fiction Again!". Others argue surveillance means we live in Orwell's 1984. Or maybe today's pop-technology is closest to Huxley's Brave New World. Or the age of post-truth puts us in Philip K. Dick dystopia. While we can appreciate the critical sentiment, are we content with the reactionary notion of going backwards to our imagined past greatness?

Climate change is another data-driven dystopia. Though definitely non-fictional, its catastrophic terminology is similar: overwhelming, inevitable, too late... dystopias represent dark futures. They demand we appreciate what we have, as the future could take it away. The future is something to resist.

"The worse the better."

Lenin believed the old world needs to be destroyed for the new Communist utopia to rise from its ashes. Both dystopias and post-apocalyptic utopias are based on a failure of the imagination as they do not offer us a progressive model we can follow to deal with today's existential threats. The climate crisis doesn't present a clear target to resist, neither does it allow us the luxury of a clear cut from the old world. We have to come up with new ways forward, not only to detract us from looming doom, but to attract us towards new, maybe even desirable futures.

> "There are many cruel and routine lies we tell to children but perhaps the most indicative is this: if you tell anyone your wish, it won't come true."
>
> —Laurie Penny

CANCEL THE APOCALYPSE

In 1516 Thomas More wrote "Utopia". In it, utopia was an island of abundance where private possession was abolished. This work stood as a unique and potent document of political imagination. Still today, we believe utopias depict what we stand to gain while dystopias describe what we may lose. So why is it so hard for us to say what we truly wish for? Studies in behavioral economics teach us that we are "risk-averse"; we hate losing roughly twice as much as we love to win. Dystopias are easier to imagine, like data-driven-determinism they are conservative—based on conserving what we have against the dangers of losing.

In the Center for Artistic Activism's Imagining Utopia workshops, Stephen Duncombe and Steve Lambert adapt Utopian thinking for creative political activism. They ask activists to imagine "How would winning look?" When the activists discuss passing a law or blocking a policy, they add "...and then what?" As the activists hopes then become more ambitious,

Image by Pamela Drew

the facilitators ask again, "...and then what?" The task becomes harder and harder as the group's utopia emerges, clarifying the core values, ethics and desires at the core of their politics.

In the 80s, Cyber Punk emerged as a leading science fiction genre depicting social anxieties from networking technologies, globalization and drug culture. Cyber Punk dystopias depicted lone protagonists rebelling against sinister control in the urban/digital decay. The retro-futurist Steam Punk genre followed, replacing cyberspace with the steam engine, but maintaining much of the Dystopian traits. In recent years we've seen a new science fiction genre emerge in the form of #SolarPunk. Started in Brazil, this genre takes inspiration from a different technological development - solar energy. The sun's power and the distributed electric grid serve as both as an infrastructural backdrop and a political metaphor. In Solar Punk fiction, both electric and political power are distributed horizontally. And unlike Cyber Punks and Steam Punks, Solar Punks are unabashedly optimistic: the sky is blue, the fashion is festive and the city is drowned in greenery. In these visions technology and the environment are not at odds. These are futures worth fighting for.

FUTURES, PLURAL.

Utopias have grown out of fashion.In the 20th Century modernist political ideologies led us to rightfully suspect Utopian dreams. Fighting in the names of both the Communist and Nazi Utopias led to wars and genocide. More recently, the Islamic State's fundamentalist utopia ravages the Middle East. Much like "One man's terrorist is another man's freedom fighter", one person's dystopia is another utopia.

Both Utopias and Dystopias are essential for us to retrieve our political imagination. The two function together as attractors and detractors. We use Utopias as guiding lights, and Dystopias to make sure we haven't lost our way.

So far we've only scratched the surface with neural networks that extrapolate the status quo. Neural Networks' current working assumption is that correlation may not equal causation, but it's close enough... To "cancel the apocalypse", the model we suggest is reversed: define a cause and then work to discover and make possible the correlations that would advance it.

Unlike the past which we can mine for data and analyze for insight, "the future" doesn't exist. We always have "futures", plural. We should consider the probable, the possible, the desirable. We should imagine attractors and detractors, utopias and dystopias. We should use data to inform decisions not dictate them. We should use automation to extend autonomy, not limit it. We should reclaim our political imagination.

"She's on the horizon:
I go two steps,
she moves two steps away.
I walk ten steps,
and the horizon runs ten steps ahead.
No matter how much I walk,
I'll never reach her.
What good is Utopia?
That's what:
it's good for walking."

—Eduardo Galeano / Walking Words (1995)

ILLUSTRATORS

Ewelina Aleksandrowicz and Andrzej Wojtas are digital media artists and video directors working under the moniker Pussykrew. With their works they explores spaces in between digital and physical realms, blending fluid identities and futuristic landscapes through experimentation with 3D animation. Pussykrew currently resides at New Inc in New York City.

Jakub Kanior (a.k.a. Flexn) was born in Poland and raised in the western part of Berlin. Growing up with punk-culture, comics and Döner Kebab, he escaped boredom, work & reality with scribbling silly pictures. And this is what he is doing until today. Jakub has been designing posters and flyers for the Berlin club scene for several years.

Anna Niedhart is creative director and co-founder of Rainbow Unicorn, a design agency based in Berlin. She works at the intersection of art and design.

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