Practicing Sovereignty

Digital Involvement in Times of Crises

[transcript] Design

Bianca Herlo, Daniel Irrgang,
Gesche Joost, Andreas Unteidig (eds.)

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Review by the editors

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Introduction

While the COVID-19 pandemic rages on in many parts of the word, social spheres are disrupted and transformed, challenging notions of distance, proximity, access or isolation. More often than not, digital technologies and services accompany these changes, and one of the oldest narratives of networked communication – to overcome time and space in a mode of instant connectedness – plays out once more. Most praise information and communication technology (ICT) during this state of global crisis as essential for keeping the economies of nation states and the mental health of its citizens above water; meanwhile, the digitalization of societies pushes ever onward – *en passant* – no longer a march but a sprint (Bratton 2020). Thus, others see less reason for enthusiasm: As people now depend even more on online retail, entertainment or video conferencing platforms to navigate their daily life, the pandemic also unveils the acceleration of capitalist exploitation in and beyond the digital sphere. Inequities in payment and health protections for the retail and delivery workers who make it possible for the "touchless" purchase of goods to be brought into our private sphere are becoming ever more significant (Pereira 2020). And while some praise the usefulness in broadly (and deeply) gathered data to help fight the spread of the virus, others have pointed out the risks of state surveillance, privacy violations and the non-consensual exploitation of personal data connected to technologies rolled out to cope with or restrain the pandemic, such as contact tracing systems (Guarnieri 2020).

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Whatever side one might take in this debate, both sides may agree that the state of crisis unveils the advantages and disadvantages of the digital sphere, opening them up for discussion in the first place. Not at all are new, but now they are once again on the public agenda (Klein 2007). The concept of "digital sovereignty" may provide a useful prism to focus this debate, while retaining the term's multifaceted openness. It is about access to and autonomy or control over ICT in (at least) three domains: the responsibilities of nation states to protect the interests of their citizens (and government) when it comes to data and technological infrastructure; the interests of companies and corporations, especially in IT-related sectors; the competence and self-determination of individuals to critically and consciously engage with technology and the data they generate (Pohle and Thiel 2021, in this volume).

Digital sovereignty has become a hotly debated term in the past few years, as the premises of how ICT impacts societies have changed: Instead of further indulging in the collective imaginaries of better, digitally mediated futures, today's narratives are dominated by rather troublesome aspects of the digital transformation. Issues such as the increasing vulnerability and manipulation of individuals, the violation of fundamental rights through mass surveillance, the highly problematic biases inherent in machine learning and automated decision-making, or the digitally mediated undermining of democratic institutions and practices have all become more and more of a threat to open and free society. The current state of crisis – elevated by but not limited to the pandemic – adds fuel to this debate, as it contextualizes digital sovereignty in a fundamental reconsideration of democratic principles, civil rights and national identities: Is (technological) self-determination still a valid goal – or even an option for every individual to cope with the digital sphere? (Where) Are paradigms shifting? Are current phenomena of deglobalization undermining the basic principles of transnational digital networks? What new developments do we now face and how can we address and qualify the social conditions that are now exposed and aggravated by the COVID-19 crisis? What chances could this crisis bring for substantially rethinking our ideas of society, its organization as well as the design of the infrastructures, objects and processes that constitute our techno-social realities? What imaginaries are we being confronted with, or do we develop, what agendas should we pursue and how

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can we implement them? Or do we have to fundamentally revisit our terms and strategies in the question of how to shape digital societies?

This book frames digital sovereignty as a right to be claimed and a process constantly in the making, as a condition of the ability to critically partake in the digital transformation. Emphasizing a political and transformative significance of the term, this interdisciplinary publication gathers scholars, activists, artists and human rights advocates who develop practices or provide spaces and structures to foster sophisticated means of digital involvement. Its aim is to identify diverse facets of what it means to be digitally sovereign, but also to critically discuss the viability of the term, especially in the light of modern-day crises and for the many future challenges yet to come. The positions assembled in this volume analyze new opportunities for social participation and policy making and recommend alternative technological and social practices utilized by various groups and collectives – both before and after COVID-19. The interdisciplinary approach to the topic, as we ascribe to this volume, is reflected in the individual contributions and, to some extent, by the profiles of the individual authors.

In their essay, **Ramesh Srinivasan**, who has a background in design studies as well as media art and science, and the activist **Peter Bloom** reflect on the fact that we still place our fullest and blind trust in technological solutions. Although technologies of today have so far failed to address our societal and planetary problems, as the authors say, we continue to pursue faith in them. Srinivasan and Bloom see some causes in the way new technologies are presented to us as unavoidable while, at the same time, remaining opaque. Also, an unprecedented amount is being invested in future speculations, fantasies of a technocracy and technology development that do not take into consideration the social and global risks. The essay is a plea for a future that honors our planet.

In an attempt to somehow find ways to mitigate developments that negatively impact our lives, the concept of digital sovereignty has become a powerful and central element. In their text, the political scientists **Julia Pohle** and **Thorsten Thiel** deliver an overview of the evolution of the concept and its many uses. They thoroughly systematize the various normative claims to digital sovereignty by retracing how sovereignty has re-emerged as a key category with

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regards to the digital. Pohle and Thiel frame digital sovereignty as a discursive practice in politics and policy and argue for more reflection and debate on how sovereign powers can be held democratically accountable.

The designer and philosopher **Denisa Reshef Kera** draws on the metaphorical lenses of the Leviathan and the Wicker Man in order to problematize citizen's agency (or rather the lack thereof) in light of smart contracts and automated decision-making processes. In order to engage citizens in the making and stewarding of governance infrastructures, she argues that it is essential to provide spaces for those very citizens to explore and experience possible effects of emerging technologies on their own lifeworld. Against this backdrop, she proposes the sandbox logic of prototyping and testing near-future technological realities as a powerful way for citizens to become informed and involved in discussions around aforementioned technologies. She offers reflections on her practical work in establishing such an environment allowing for testing, experimenting and deliberating on possible, algorithmically mediated futures.

Digital sovereignty is discussed by **Gesche Joost** as a guiding principle to bridge the gap of the digital divide. By highlighting some aspects of digital inequalities on a global level, she asks about our guiding principles for future policy making in order to overcome those inequalities. With her text, the design researcher and political advisor Joost opens the way to think proactively about policy spaces that are decidedly dedicated to a more inclusive digital society. Joost discusses the European policy frameworks as an opportunity for more data protection, cybersecurity and ethically designed artificial intelligence.

The sociologist **Philipp Staab** states in his essay three specific areas of sovereignty crisis: consumer sovereignty, civic sovereignty and economic sovereignty crisis. Along the recent history of the capitalist development of the internet, Staab argues that in order to understand the extent of the sovereignty crises in digital capitalism, we need a systematic analysis of the connection between commercialization and oligopolistic domination of the internet – as well as its political control. The essay frames the European data policy as an important contribution towards preserving economic, civil and market sovereignty.

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Claudio Guarnieri, security researcher, technologist and human rights activist, offers a personal account on the open-source movement and discusses the efforts of Big Tech to appropriate open-source systems and work methods. As a way to counter such an industrialization of community-driven technology, Guarnieri calls for reclaiming digital sovereignty by first understanding the technological black boxes of our daily lives. His artworks "RADIO ATLAS" (2020–) and "BLE ATLAS" (2020–) analyze and display the data transmitted via smartphone radio emissions and Bluetooth low energy (BLE) beacons – the latter becoming a valuable research devise for BLE-based COVID-19 contact tracing apps.

As a data politics researcher, **Fieke Jansen** looks at the conceptualization of contemporary data governance in relation to capitalism and the value of data. Her text draws on a close reading of the European Commission white paper on artificial intelligence (AI). Along this reading, Jansen reveals how data and data infrastructures are seen by the state, e.g., as essential to sustainable economic growth and societal well-being. She elaborates how the Commission regards major shifts in technological development as opportunities to (re)gain control over data infrastructure spaces, especially in the context of a market for European trustworthy AI products.

In a strong manifesto style, the writer and urbanist **Adam Greenfield** connects the pandemic, climate change and the staggering developments in machine learning, automated decision making and other replacements of human agency and communality to a context in which societies and the dynamics of our planet are brought out of balance. In its exploration of the planetary upheavals constituting the Anthropocene, the sweeping analysis includes a profound critique of left accelerationalism: Behind the accelerationist teleological endeavor to transcend late capitalism by firing up the capitalist motor, Greenfield exposes a blatant techno-solutionist attitude that undermines basic principles of political economy – and mutual care.

The London based collective **Common Knowledge** offers insights into their very hands-on approaches to digital sovereignty. In their contribution, Common Knowledge share and connect experiences from both their own working structures as a not-for-profit worker cooperative as well as from their various activities in building technological infrastructures for different community groups and unions concerned with building working class power and

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sovereignty in different forms. In order to achieve the latter, they argue, *just enough* digital sovereignty should be the goal, in that "digital technology must be seen as an enabler and multiplier of collective action and organizing techniques, not a replacement."

The design researcher **Paola Pierri** investigates the relationship between digital sovereignty and democratic rights, particularly the relations between state, citizens and corporations. In their promotion of the Californian Ideology narrative that the individual is liberated via technology, corporations construct the mirage, Pierri argues, of an autonomous digital citizen. In doing so, they undermine state sovereignty itself by taking over the legitimation of popular or individual sovereignty. Based on this critical inside, Pierri calls for the construction of new imaginaries for enabling individual sovereignty in the digital age, detached from tech corporate biases.

The artist and designer **Juan Pablo Garcia Sossa** weaves together and reflects on several threads around identity, situated knowledges and exploitation. Understanding the notion of *Tropikós* as a mindset, he poses the question of whether and how the concept of digital sovereignty can be manifested in the tropics. In his artistic piece GeoFilters, he investigates differences and ambiguities in the meanings and understandings of terms such as *privacy* and argues for a radically differentiated perspective in order to avoid the pitfalls of what he calls binaries and verticalities.

In his essay, the writer and journalist **Thomas Ramge** frames the phenomenon of techlash as a starting point for a new postdigital discussion, a discussion that places digitalization in a radically new paradigm of costs and benefits. He pleas for a pragmatic attitude toward all things digital, drawing a scenario for the future that emphasizes a sovereignly use of digital technologies. For him, constructive criticism of technology is the prerequisite for bringing the rebound effects of digitalization in the post-digital age under control.

The design researchers **Bianca Herlo**, **Sandra Stark** and **Malte Bergmann** draw an understanding of digital sovereignty from a design perspective, as a practice that focus especially on countering inequalities. The text reflects a design research process that led to the development of the multilingual installation "Talk to Me." Through the installation the authors discuss the potentials and confines of digital and public participation, and the crucial role digital literacy plays here. They frame digital literacy as one that not only

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stresses competent navigation through the digital world but embraces the dimension of steering and designing processes of digitalization – as a form of critical, socio-political embedded digital literacy.

As a speaker for feminist net policy, **Francesca Schmidt** looks at the digital policy area as one that is still evolving and still lacks feminist and intersectional approaches. By describing how forms of discrimination are interconnected with new technologies and digital cultures, she contributes to the research and activism environment of feminist digital policy. Her essay takes a closer look at the consequences we face due to norms and rules that are initially based on data that is outdated or manifests structures of discrimination and dominance. Schmidt suggests that one possibility in addressing this imbalance is to provide anti-discrimination legislation for algorithms.

International press such as *The New York Times* (Metz and Hill 2021; Metz 2019) has repeatedly covered the techno-investigative research of **Adam Harvey** and **Jules LaPlace**. In their article the artists, developers and researchers describe the core of their recent work, the project MegaPixels (2018–2020),[1] which uncovers the widespread practice of harvesting data sets *in the wild*: Images and video footage available via online databases, often harvested without the consent of the persons depicted, are exploited as machine learning data sets for face recognition and other biometric analysis.

Mona Sloane's contribution is set against the backdrop of a New York City reality in which even the most mundane social interactions (have to) take place online due to the COVID-19 pandemic. The sociologist elaborates on the research project Terra Incognita NYC, which explored how New Yorkers dealt with this very phenomenon, how they created and navigated these new public spaces online and the broad range of experiences they had. Sloane reflects on the data gathered through the lens of digital sovereignty and shares considerations on topics such as access, ownership and infrastructure, and highlights the implications of individuals legal status as well as class divisions for both understanding as well as practically experiencing what it means to be digitally sovereign.

1 In January 2021 MegaPixels was transferred into a new project, Exposing.ai, offering a website and database for users to check if their images on Flickr.com have been used as part of AI training datasets – thus uncovering "how yesterday's photographs became today's training data" (https://exposing.ai/about/).

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The artist **Danja Vasiliev** provides an insight into his current project WannaScry, a *critical engineer's* take on video call technology. With the migration of workplaces and social interactions into the distancing sphere of one's home, video conference platforms experienced a surge in popularity during the pandemic. Vasiliev shows that the seemingly private face-to-face conversations are at risk of being exploited, e.g., by using harvested data of facial expressions to train machine learning algorithms. Addressing the efforts of tech companies to close their systems off from user interference, the interview contextualizes the artwork in Vasiliev's general approach of exposing opaque digital devices, applications and services.

Museums are among the cultural institution most deeply affected by the pandemic lockdowns taking place in most parts of the world. The curators and artists **Yang Jing** and **Li Zhenhua** examine how art museums in China struggle not only with the closing of their exhibition spaces but also with the data extractivism of (Chinese) platform capitalism and state censorship while they are faced with the need to open their collections and programs to social media platforms such as WeChat or Douyin. The case studies on the COVID-19 accelerated digitalization of art exhibitions and museum communication provide insights into the situation of art venues in China during the pandemic.

In their article, the researchers in digital aesthetics **Søren Bro Pold** and **Christian Ulrik Andersen** reflect Amazon's algorithmic apparatus and its highly commercial process as one of the four biggest technology companies that is known for its disruption of well-established industries. The authors elaborate on the extent to which we become characters in Amazon's "big data drama" through focusing on Joana Moll's artistic-investigative work "The Hidden Life of an Amazon User" (2019), and Robert Musil's novel *The Man Without Qualities* (1930-43). Along the two artworks, Pold and Andersen draw attention to Amazon's algorithms, at profiles of disruption without qualities and how we as users are endlessly profiled.

Hagit Keysar (theorist and activist), **Elizabeth Calderón Lüning** (political scientist) and **Andreas Unteidig** (design researcher) share the conviction that logics of DIY, collective prototyping, open source and participatory design can be powerful tools for advancing a community-driven imagination of digital sovereignty.

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However, they argue that such logics and their corresponding processes often come with their own caveats and obstacles. Their chapter offers a case study of an interdisciplinary research project that aimed at co-creating techno-social infrastructures for digital sovereignty, and unpacks a range of challenges encountered in its course. A critical reading of promising concepts as well as a thorough reflection of risks, contradictions and politics-in-practice, they argue, might open opportunities for both political action and public discourse that problematizes and challenges the tightening corporate control over digital realms.

In his essay, the media archaeologist **Siegfried Zielinski** takes his current collaboration with the avantgarde musician and sound artist FM Einheit as a starting point to explore the notion of the virus for subversive practices, in language, art and beyond. While emphasizing the freedom of the host, not the virus (which is bound by its determinacies), the poetic investigation follows thinkers such as William S. Burroughs or Jean Baudrillard to offer alternatives to the return to a state of normalcy. After mapping some of the sensitive and fragile interdependencies between nature, humans and their technologies, Zielinski closes his thoughts with a personal projection for a future mode of teaching and research in art and design.

We understand this book as a call for inter- and transdisciplinary engagement with the practices and spaces of possibility that address skewedness and imbalance in the networked society. It is thus not surprising that this book brings together many authors from various backgrounds and fields of activity. This variety of perspectives, competencies and experiences is, we believe, one of the central strengths this compendium has to offer. We are convinced that the practice of scientific knowledge production and discourse, if it wants to make a difference, must be inclusive itself, fostering dialogue between different experiences, viewpoints and knowledges. This book is thus an experiment as much as it is a plea for a cultural change in academia, aiming at adequately addressing the complexity of the concept of digital sovereignty and its societal implications.

The editors
Berlin, June 2021

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Tech Barons Dream of a Better World – Without the Rest of Us

Despite their promises to save the world, tech CEOs never seem to succeed. Why do we keep falling for it?

Ramesh Srinivasan and Peter Bloom

Both now and in the past, Western liberal democracies have approached free market capitalism with a pattern of speculative and delusional infrastructure and technology investment. Our parents were promised flying cars. We were promised an "Internet for the People," a global platform on which everyone has a voice. Our world today, however, is one in which innovative digital technologies dazzle us, yes, but also where many of these promises – of supporting democracy, diversity or economic security – have not come to be.

So why do the political fantasies of the technocracy continue to tantalize us? How did we get to a point where those driving the future of technology – who hold such great power over our societies – pour

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trillions of dollars into investments, often built upon publicly – funded subsidies, with little positive impact on our lives or planet? Why are some of tech's greatest entrepreneurs so invested in the project of getting us all to leave our bodies and the only planet our species have ever known?

An answer can be gleaned by looking at our unconscious attachments to and assumptions regarding technology. A canonical example, dating back to Greek literature and philosophy and foundational to Western thought, science and civilization, is *deus ex machina*. Although the term's current use has been taken out of its original Greek context, it once referred to a trick in theater where actors who played Gods were brought, by mechanical cranes or rising platforms, onto the stage from above or below to pleasingly and quickly resolve the story for the audience. The mechanical technology of the time was a bridge between the heavens and the earth. Though a crowd favorite, it was also a "trick" by which a seemingly unresolvable story was unsatisfactorily resolved.

Today, thousands of years later, we continue to live in an age where gods and machines are conflated – one in which technological "solutions" are seen as a means of resolving the problems of society, yet never quite seem to deliver convincingly. We are becoming aware that the arc of social progress has irreversibly bent towards risk and precarity, while many believe only technology can save us.

Technologies and machines are also the loom on which we spin the myths that push forward the engines of speculative capital – the massive, irrational and undemonstrated, investments made in digital infrastructures – to produce technologies that can rescue us from the disasters of our own making. We now are realizing that these myths have not come to be. Many "innovative" systems, from facial recognition to machine-learning algorithms applied to human resources, insurance and bank loan systems, have been found, time and again, to discriminate against racial minorities, women and the poor.

Our blind trust in digital technology has had a huge impact not only on economic and political realities but also our beliefs and aspirations; from what we consider to be progress to the stories we tell ourselves around who an innovator is. Perniciously, these stories even appear to be fodder for those hoping to escape a supposedly unredeemable society and unsaveable planet. Whether due to global pandemics, climate crises, nuclear proliferation or gross economic

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and political inequalities, collapse seems always right around the corner, if not here already, and the wealthiest and most powerful in our world are planning for it and profiting from it while the rest of us are left to accept our fate.

Technology is an important lens we can use to see and understand uni-polar, unfettered global capitalism, while also a major driver and shaper of economies across the world. Unfortunately, the technology of today, especially of the digital variety, has done little to address our human and planetary risks. Rather, as we have recently seen, it has become associated with addiction, consumerism, planned obsolescence, labor and environmental exploitation. We have spent the last few decades molding military technology (as the internet originally was) into a weapon that may compromise rather than support our ability to come together, societally and globally, to overcome the challenges we face.

Our aim in this essay is to understand how these technologies are presented to us as both inevitable, yet intentionally obscured. A lack of transparency or accountability around new technologies makes it hard to understand how and why they are created. It also strips us of the power we need to ensure it serves our peoples-based interests. We will also discuss how technology is driving the frontiers of capitalism beyond its traditional domains into our minds, bodies and outer space. Troublingly, these transformations rest upon the presumption that people and the planet itself are inconvenient, messy and in decline, and instead of doing everything we can to heal our planet and uplift our species, we instead design technologies that reinforce doubt and pessimism.

Before we can understand the whats and wheres of today's and tomorrow's technology, we need to interrogate the whys. In other words, what is the thinking and even psychology behind the digital technologies that are funded and ultimately developed? This will help us understand why technology is not only conceived of and treated as morally neutral – "scientific," "innovative," and forward-focused – but also why it is so often accorded with great social, even pseudo-religious, respect and pomp. Rather than being viewed as socially, politically or even narcissistically or delusionally constructed, we often view technology as "natural" and inexorable, even sublime and divine, ignoring its true origins and contribution towards particular ideological, political or economic agendas.

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Let's consider the term "neural network," wherein brain cells, and how they function, are mapped onto a computer learning model, despite us neither knowing exactly how neurons function nor being able to express the ways these cells together help us "learn" in fail-safe mathematical or scientific language. Despite these problematic issues, we rarely see any interrogation of the implicit and unfounded assumptions behind how we treat or think about computer technology, such as: *The brain is a computer, we can model the computer after the brain, and therefore an artificial intelligence system is little more than a simulation of how our brains function, but with far greater computational horsepower*.

Of course neither a hard drive nor a sophisticated machine-learning algorithm is the same as the transcendent experiences of the mind, from synesthesia to consciousness. No AI, despite all the proclamations of its time having arrived, has ever passed the Turing Test, able to convince a human it is another person and not a machine.

Despite this, leading figures in the history of artificial intelligence, such as Marvin Minsky, have long treated body, mind and technology as interchangeable. Consider Minsky's (1986) famous text *The Society of Mind*, which presumes that the mind can be computationally modeled, if not augmented, simply by feeding an "intelligent" computer system with a large enough set of common sense rules. Not only does such a framing ignore emotional, spiritual and embodied forms of intelligence, it reduces our mind to a formal and limited set of rules. It ignores all the other ways we learn, know and do, our diverse cultural and social ontologies. It overlooks the social, even environmental, production of intelligence, wherein our minds, in communion with those of others, or even in relation to things, places, plants or animals, create meaning and knowledge.

Other foundational realms that have defined our approach to technology have emphasized extending biological and cognitive metaphors to naturalize technology as well. Consider the cybernetic turn in the computer sciences that dates back to the late 1940s, which explores the architectural and structural features of communication systems. The foundational science behind artificial intelligence, cybernetics also blindly equated the network architectures of technology with the human mind, and continues to be viewed as gospel. But in so doing, all the sweeping assumptions underlying cybernetics are ignored, particularly the genesis of its development as

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a mathematical architecture of warfare and defense. Norbert Wiener, the founding father of cybernetics and a revered figure at MIT, defined the field as the "scientific study of control and communication in the animal and the machine" (Popova 2018). But when one turns to animal sciences, human biology or neurosciences, we see very few conclusive answers to how control and communication occur. This reveals how cybernetics like so many other myths and metaphors associated with technology is an example of cultural and political projection, rather than purely objective "science."

Moving forward to the present and near future, we must question today's obsession with the Singularity, the spiritual successor to cybernetics (Pein 2018). Many apostles of technology not only predict but promise this transcendent moment when computer systems come to exist that are so self-aware and highly optimized that they overtake humans in both physical and cognitive abilities, leading to major changes in civilization and perhaps even the extinction of humans altogether. The Singularity, as both idea and prediction, comes about when we develop technology for its own sake without considering the consequences, uncritically assuming somehow that it is our savior. Many, including those busy building some of the computer and digital technologies we discuss, believe the Singularity is a foregone conclusion.

The Singularity represents, perhaps better than any example, an embrace of technological inevitability, and shares much with some of the most influential political proclamations in recent history. In his highly influential book from 1992, *The End of History and the Last Man*, Francis Fukuyama declares that capitalism and Western liberal democracy's defeat of socialism with the culmination of the Cold War, represents an "end of history." This is notable given that, in many ways, this proclaimed end of history has been defined by continued plunder within a pro-capitalist framework across the planet that has posed existential threats to our and other species, essentially setting the stage for a final, tragic ending to this epoch of humanity. As we can see with the wave of protests for Black Lives across the world, certainly we are nowhere close to the "end of history" when it comes to questions of racial justice.

In the midst of these existential challenges, where have we taken technology? Not in a direction that directly combats what we face, be it inequality, climate change or the coronavirus pandemic, but instead

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in the service of speculative capital and infrastructural investment, whether via space and 5G infrastructures, or artificial intelligence, all the while clinging onto the Singularity as the inevitable, yet spectacularly ill-defined, end point for humanity.

Why does it seem that tech companies in the West are so blind to our true predicaments, inventing new escapist realities and possibilities while avoiding the massive challenges that face all of humanity? This is not dissimilar from many other major players such as those within the energy and health sectors; for example, oil companies that have been aware of their impact on the climate crisis for decades yet refuse to confront the damage they themselves cause and even actively stymy alternatives. Perhaps the difference is that digital technology companies have convinced us they are different, somehow more enlightened and smarter than the rest of us. We know the names of the CEOs of the Big Tech companies but not the head of Exxon, Aetna, Bayer or Pfizer. Why is this? Why are we so interested in these titans of the tech industry, elevating some such as Elon Musk as social icons, even while many of them seem so interested in a world beyond or without 99.9% of us?

The most prominent technology "innovators" tend to share a common aspiration: prospecting new frontiers that represent supposed safety (for some) in times of great anxiety, whether relative to the COVID-19 crisis of today, or the spectacular march towards climate-induced extinction. No wonder then that the world's wealthiest man, Amazon's Jeff Bezos, has matter-of-factly stated that his personal, mission-driven purpose is focused on his for-profit space exploration company Blue Origin (Preza 2020). Peel a little further and you see in Bezos, a supposed innovator bringing our world into the future, a man full of fatalism.

When asked about his goals for space exploration – and eventual colonization – Bezos explains, "I'm pursuing [Blue Origin], because I believe if we don't we will eventually end up with a civilization of stasis, which I find very demoralizing" (Murphy 2018). Bezos, the wealthiest man in the world, is dispirited by a future of civilizational stasis. This is not surprising as his brand of innovation requires quite a bit of disequilibrium. How could a stable system exist when an online bookstore becomes one of the most profitable companies in the world? Is a system stable when Amazon warehouse workers make $27,000 a year on average, more or less at the poverty line, while

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Bezos makes nearly $9 million an hour, and is now over $30 billion richer since the onset of the COVID pandemic (Hamilton 2020)? One does not have to probe too deeply to see that Bezos's race for space cannot be understood separately from the perpetuation of the unequal conditions he exploits and sustains on Earth.

To be fair, Bezos is not representative of every tech oligarch. But the Amazon kingpin is not alone, either. Elon Musk, Richard Branson, and numerous other billionaires have put their rhetorical and financial weight into space infrastructures and AI.

From Elon Musk, for example, beneath a thin veneer of innovative do-anything spirit, we glean a cynical defeatism. In "Lo and Behold, Reveries of the Connected World" (2016), he tells filmmaker Werner Herzog that he is intent on pursuing space because society, at any moment, could come apart at the seams, due to natural or man-made disasters. Musk posits that now is the time to ensure that human beings have the opportunity to become an interplanetary species before it's too late and we no longer have the energy or technology to get all the way to Mars. While we recognize Musk's investments into solar energy, his continued attention to space and AI raises several important questions: if Musk is such an innovative genius and humanitarian, why is his energy not primarily focused on solving the problems he sees on our planet? Why not focus all his efforts on developing technologies to empower our species and keep the planet livable instead of, for example, obsessing over how to terraform Mars for the benefit of a few hundred people? It's a fantastic achievement to see Musk's SpaceX initiatives in action, including the recent launch that occurred at the end of May 2020, but who exactly are they intended to benefit?

Musk has expressed concern about Artificial Intelligence systems overtaking humans; in terms of intelligence, decision-making, and ultimately usurpation of political and economic power. He has pointed out that AI must be "optimized" carefully, because, intentionally or not, it could have disastrous effects. In response, Musk has devoted some rhetorical and financial weight to Open AI, which he co-founded with millennial billionaire and YCombinator founder Sam Altman. Microsoft also just contributed $1 billion to the initiative as well (PYMNTS 2019). Open AI describes its mission as funding and supporting research devoted to "discovering and enacting the path toward safe artificial intelligence" (OpenAI 2021).

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But what is safe, and who defines it? Should we keep building toward an "AI-runs-everything" Singularity given such dramatic concerns? If we take Musk's stated intentions (and concerns) at face value, the result is puzzling. For example, why does he devote time and resources to warning us about AI, while also serving as one of its biggest backers, via his for-profit company Neuralink, (which has received over $150 million of funding, much of it personally from Musk [Markoff 2019]) that engineers implantable brain-machine interfaces? Yes, we could imagine Neuralink helping people living with disabilities a great deal, for example in assisting their ability to walk without any working limbs. But there's much more to what Neuralink represents: an interface that can transform the man-machine relationship from tool to full cyborg. Would Musk not want to stop work in this area if he feels that we are headed toward a world governed by sociopathic AIs? Instead, he repeatedly cites human frailty and deficiency in comparison to AI, advising us that we should just "go along for the ride" (Musk 2020). Is Open AI nothing but a finger placed in a dike about to burst from the flood he has helped create, a failed attempt that he himself recognizes to have his cake and eat it too? Whose ride is he talking about?

We must ask some tough questions of those we have elevated onto the big stage as "technology innovators" and interrogate the underlying psychology of their motivations and aspirations. Innovation once meant introducing transformations to take our world toward tomorrow, ostensibly inspired by a spirit that these achievements could lift all of us up – our businesses, citizens, environments and societies. Innovation is a term commonly associated with resourcefulness, doing more with less, creating within conditions of scarcity, creating life out of death. Innovation is a playful, creative process, one guided by humanism in creating technologies of all kinds that together we can celebrate and enjoy.

Where did that kind of innovation go? Can a cynical defeatist actually be considered an innovator? Let's look at Apple for example, which has long been admired within the gospel of tech innovation. Is this company actually innovative given that it designs its iPhones with a ticking "planned obsolescence" time bomb? Why don't we instead elevate people like Los Angeles-based social entrepreneur Eric Lundgren who has taken electronic waste, repaired it into working

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machines, hired dozens of workers, and created a multimillion-dollar business? Lundgren's creativity and resourcefulness has been instead rewarded by a felony conviction and prison sentence, all because he was actually innovating – creating value out of trash; doing more with less.

As we uplift these myopic, opaque and self-serving approaches to technology innovation into heroic feats, it is no wonder that so much money is going towards literal and figurative moonshots, ones that treat not only our planet but also our bodies, minds and frankly the rest of the universe, as spaces to be occupied and submitted to the logic of speculative capital; throwing vast sums of money into far-out technologies to shape and reshape society as a whole and ensure outrageous returns on investment. Once enough key investors (we even call them "angels" sometimes) see an opportunity and sink enough money into an idea, the rest of us are forced to go along for the ride, regardless of the social utility of the product or service.

Take ride-sharing companies like Uber and Lyft as examples. They are not profitable businesses and rely on constant injections of cash from their investors (Newcomer 2019) to keep their doors open until such time as they can fully undermine traditional taxi services by offering artificially low prices (thanks to their investors' deep pockets), changing legislation in their favor and eventually replacing human drivers altogether. This is what passes as innovation these days, and represents the darker side of the "disruption", another branding term being constantly bandied about.

Or consider that experts predict that $2.7 trillion of investment are required to bring about 5G networks around the world (Greensill 2019). Why? To provide us with networks that even the network operators themselves have no idea what to do with or how to recoup their investment on (Blum et al. 2019). It is very short-sighted to expend so much money on technology whose main benefit will be to bring virtual reality to our mobile phones while likely causing a plethora of negative outcomes for most of humanity, including: increased use of energy to power the network by a factor of 2 or 3 (Hardesty 2020), widespread automation leading to unemployment (Smialek 2017), and the creation of millions of tons of e-waste (Karottu and Cummings 2019) as perfectly well-functioning network and terminal equipment is thrown away to make way for a new generation of

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mobile technology. In response to both real and imagined health impacts from 5G networks, there has been a great deal of concern and organized action to halt 5G. What has generally been lost in these discussions are the far larger challenges 5G poses as a mechanism of massive and pervasive surveillance, threatening our economic and political lives and endangering work and workers of the future.

This approach to investment is not only unsustainable, it is essentially speculation for its own sake – moving money from one sector to another, without producing much of value to everyday people, all while putting our planet in further peril. It is striking how speculative capital is also focused on a pivot away from the Earth even as technology-fueled capitalism moves towards a 5G-enabled, workerless "brave new world" in order to overcome the first contradiction of capital: that of organized labor moderating capitals' excesses. The addition of non-planetary geographies and resources as viable areas for capitalist expansion make sense as the system is confronted with the second contradiction of capital, wherein the overexploitation of Earth's finite natural resources like water, air and minerals are "not only threats to profits and accumulation, but also to the viability of the social and 'natural' environment as a means of life" (O'Connor 1988). In the short term, destroying the planet is a good business move, but not in the long term – that is unless you can find other places in which to extract primary resources and surplus value, and perhaps inhabit eventually: hence the technological tendency towards outer space and our minds. So we keep the logic of accumulation, just change the scenery.

With regards to space exploration and infrastructures, our conversation does not start and end with Elon Musk. As mentioned, Jeff Bezos (via Project Kuiper and Blue Origin) and Richard Branson (Virgin Launch, Virgin Galactic, etc.), amongst other technology billionaires, are in the mix as well. Musk, at present, however, is the dominant player in this market with his companies SpaceX and its subsidiary, Starlink.

Despite rhetoric from tech companies regarding "connecting the unconnected," or connecting the "last billion" (Graydon and Parks 2020) – in other words getting the entire global population online –, it seems evident that the initial users of new space-based and 5G networks will be commercial, and tightly aligned with supporting other infrastructures and services of global capital. Musk's Starlink,

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a low-Earth orbit (LEO) satellite constellation, is targeting low-latency solutions like high-frequency trading, providing connectivity for ships and airplanes, and supplemental backhaul for 4G and 5G base stations. It does make economic sense when considering that these projects must recoup massive R&D investments including building and launching thousands of satellites or hundreds of thousands of new wireless base-stations in the case of 5G.

Nevertheless, it is striking and unfortunate that these efforts are unlikely to impact unconnected populations, despite major lip-service from both new entrants like Starlink and Kuiper, as well as traditional mobile networks operators. The caveat to this is the possibility, in the case of the LEO constellations, that once they have secured sufficient income from large commercial users and the military, they should have plenty of extra capacity to provide services to uncovered areas. What remains to be seen is if these new generations of non-terrestrial connectivity will actually be affordable for the poor and marginalized populations that comprise most of the "unconnected."

Two out of five of techno-capitalism's sacred GAFAM brotherhood (Google, Amazon, Facebook, Apple, and Microsoft), Amazon and Facebook, have low-Earth orbit satellite ventures in the works. In addition, Google is trying to get above Earth with its Loon project, albeit at a much lower altitude and within the atmosphere, using high-altitude platform station (HAPS) technology, floating 4G and WiFi-enabled balloons in the upper atmosphere, beaming connectivity down to earth. Even Apple, despite having little experience in creating networks, is rumored to be entering the fray, having recently hired satellite and wireless technology experts to join a secretive team (Gurman 2019).

While these digital giants operate massive amounts of physical infrastructure already, primarily fiber optic cables and data centers, their networks are private and internal, and therefore inaccessible to public governance or oversight. That is a concern given that they want to now operate global, public-facing internet provision services as well, further consolidating their ability to monetize all of we, the public's, activities and movements, while their decisions, whether around surveillance, privacy, or acquisition of intimate data, are made behind closed doors. With these corporate actors controlling every layer of the "stack," from infrastructures to networks to software platforms and algorithms, it will be nearly impossible to know what data

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they harvest, or how it is retained or acted upon, nevermind retaining any semblance of net-neutrality.

Space-based "connectivity technologies" present a host of other concerns. For one, they are "top-down" in more than one sense – not democratic or cooperative technologies, but controlled by a small capitalist elite. We can assume that for many there is something unnerving about having the globe encircled by thousands of satellites, balloons and drones. Perhaps this is because, from a spatial perspective, there is no way to know what infrastructure you are actually connecting to, where it is or what it is doing.

Another issue is the overcrowding of and debris associated with space and the orbits around our planet (Witze 2018), which remain, at least legally, a publicly and collectively regulated commons overseen by the United Nations. Since 1957, 8500 objects, of which around 5000 are satellites, have been launched into space (UN Office for Outer Space Affairs 2021). Starlink alone has requested permission to launch tens of thousands of satellites into orbit (Henry 2019b), and even admitted this is far more than they need to be commercially viable (Henry 2019a). Disappointingly, they have already shown, even with around 500 satellites in orbit, to be uninterested in coordinating with others (O'Callaghan 2019a). It seems almost inevitable at this point that we will clutter the areas around the Earth with many, many more objects than ever before. And these objects, mainly satellites, will have an ever-increasing importance for activities on our planet.

This coming reality has not escaped the militaries of countries with substantial existing investments in space, and even some that do not play a major role in the space-infrastructure race (Grush 2019). While maneuvering to convert space into a bellicose environment decreased substantially in 1993 (Trevithick 2019a), when US President Bill Clinton's administration brought the Reagan-era Strategic Defense Initiative to an end, the topic seems to be back on the radar. China, Russia and the US are all working hard to position themselves as the premiere military power outside of Earth (Majumdar 2018): gun-boat diplomacy for the Space Age.

As an example, consider that as the latest round of space colonization is being proposed by US corporations, the sixth branch of the US Armed Services, and the first new military service since the Air Force was created in 1947, was launched last year: the Space Force.

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Mark Esper, US Secretary of Defense, described the purpose of the Space Force thusly: "to make sure that we can preserve space as a global commons… It's important not just to our security, but to our commerce, our way of life, our understanding of the planet, weather, you name it. So it's very important that we – we now treat it that way and make sure that we're prepared to defend ourselves and preserve space" (Esper 2020). While Esper describes space as a commons, he also makes clear what the Space Force is really about: making outer space a safe place exclusively for US companies and its military.

The intertwining of corporate and military interests in space (Tingley 2020) is worth exploring further as the government has changed its rules to allow for private companies to launch military equipment into space and has been actively creating a supportive regulatory and funding ecosystem for such. For example, SpaceX won its first big-ticket classified military launch contract for the Falcon Heavy rocket in 2018, when Musk's company was awarded a $130 million contract for the launch of Air Force Space Command (AFSPC)-52 satellite (Erwin 2018). These juicy government contracts, in many cases, create the incentive and capital injections that new launch companies require to literally get off the ground (Fernholz 2018). The unspoken but assumed quid pro quo was made evident when SpaceX President and Chief Operating Officer Gwynne Shotwell publicly admitted the company would be willing to launch offensive weapons into orbit for the US military if asked (Trevithick 2018b). Indeed, SpaceX was awarded a multi-million dollar contract in 2018 as part of the Defense Experimentation Using Commercial Space Internet program to install satellite receivers in military aircraft (Boyle 2018). The company was even slated to assist in a live-fire demo with the US Air Force and Space Command as part of testing for the Advanced Battle Management System in April (Gresik 2020), but the exercise was postponed due to the coronavirus pandemic.

It is troubling that the next chapter of space exploration is being written by the military and a few billionaires, while the rest of us are barely subjects in their story. As we've explained, next generation space networks are being specced and built to provide capacity for military capabilities, something we have also seen with 5G networks. The original ARPAnet, what eventually became the internet, was funded by US taxpayers with heavy military involvement, so there is

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certainly historic precedent for this kind of involvement; and while concerning, it should not be too surprising that the iconic technology of our times continues to loop back to its roots as a military network.

The uneven application of so-called technological progress was apparent at the dawn of the Space Age. Consider that the race for space has historically excluded 99.9% of the population; this fact is not lost on those left behind. Fifty years ago, Gil Scott Heron's epic "Whitey on the Moon" narrated the discontent of paying taxes to put "whitey" on the moon while black Americans suffered from racial injustice, the absence of civil rights and dire poverty. Why, with such profound inequalities, would the government use so much of the country's wealth to travel to space?

Heron knew that this "innovation" was not for him, fellow black Americans or really anyone but the uber-rich. We see this in clear action today with a massive, unseen wave of global protests in support of black lives and justice. Whether it is publicly funded space exploration (NASA) that Heron critiques, or even worse the private–military expeditions we have discussed, it's hard to see any benefit for most people. Heron sums it up when he chants, "a rat done bit my sister Nell with whitey on the moon. Her face and arms began to sweat and whitey's on the moon. I can't pay no doctor bills but whitey's on the moon. Ten years from now I'll be paying still while whitey's on the moon. The man just upped my rent last night cause whitey's on the moon."

Not much has changed in 50 years in terms of how the oppressed view the clamor for space. In 2016, pioneering Black American hip-hop artists A Tribe Called Quest released a song called "The Space Program." It goes:

> It always seems the poorest persons are forsaken, dawg... They'd rather lead us to the grayest water poison, deadly smog mass un-blackening, it's happening you feel it y'all? Rather see we in a three-by-three structure with many bars. Leave us where we are so they can play among the stars. They taking off to Mars, got the space vessels overflowing. There ain't a space program for n*****s, yeah, you stuck, stuck, stuck.

The circular process of military and public funding working hand in hand with companies to privatize the profits and socialize the adverse

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effects and costs back onto the public is not unique to digital technology. But it feels particularly perverse within the well cultivated, myth-saturated backdrop that we live within: of creating technologies to "liberate" humanity when ultimately 99% of the power and profits end up with the tech companies that dominate our world. In the meantime, the question of how we, the human species, will live on Earth moving forward is not only shoved aside, but met with fatalism, indifference and even war posturing.

* * *

What is happening here? Not a focus on "better tech," or any clear examples of how all of this will benefit humanity and combat the existential challenges we face, from pandemics to the climate crisis to arms proliferation. Instead, it is survivalism in action. In 2018, technology writer Doug Rushkoff published an essay entitled "Survival of the Richest: The wealthy are plotting to leave us behind" (Rushkoff 2018), in which he tells the story of being invited to deliver a well-compensated speech to a number of investment bankers on the future of technology. To his surprise, few of the questions he received were about that, let alone the topic of his writing: humanizing technology. He was instead peppered with questions about "the (apocalyptic) event," a "euphemism for the environmental collapse, social unrest, nuclear explosion, unstoppable virus, or Mr. Robot hack that takes everything down" (ibid.).

Rushkoff was asked about angry working-class mobs, which regions were likely to be more devastated by climate change, and how to compensate and trust security guards after the whole system collapses. And then he had an epiphany of why he was invited into the room:

> Taking their cue from Elon Musk colonizing Mars, libertarian venture-capitalist Peter Thiel pumping himself with young people's blood to reverse the aging process, or Sam Altman and Ray Kurzweil uploading their minds into supercomputers, [the oligarchs] were preparing for a digital future that had a whole lot less to do with making the world a better place than it did with transcending the human condition altogether and insulating themselves from a very real and present danger of climate change,

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> rising sea levels, mass migrations, global pandemics, nativist panic, and resource depletion. For them, the future of technology is really about just one thing: escape. (Ibid.)

In this moment of pandemic hysteria, buttressed by technology-fueled misinformation, we can hopefully gain clarity and drive Rushkoff's conclusions home: Those holding economic and political instruments of power in our world not only disbelieve in their "innovation" project but in fact question our species' survival. Rushkoff, like us, is arguing for technology that serves the interests of all people, but his attempts to convince these hedge fund managers otherwise bore no fruit. And Rushkoff's great insight was this: The financiers who are behind speculative (often delusional) tech investments are, at their core, fatalists. They have no hope for the future of our planet – belying the marketing rhetoric of the tech companies they invest in.

How can we move past the bait and switch of those constantly telling us that technologies are beneficial, even aspirational, when, in many cases, they are the opposite? How do we get beyond the hijacking of language and words like "innovation" to stop being blinded and instead see the painful reality: Those building and monetizing the technologies of today and tomorrow themselves seem to question the "value" those technologies hold to our planet and species? They even seem to recognize, if not endorse, a path toward collapse. The tech barons who have broken every record imaginable in terms of philanthropic giving are at the same time grossly benefiting from the rules, both laws and code, they write around how our economic, social and political systems function. In an era of great philanthropy, we see even greater greed, hoarding and oligarchic transference of power than before, a time when "winners take all" (Giridharadas 2019).

If the bankers, venture capital investors, hedge fund managers and technology innovators are going to leave us behind, then it seems those of us with far less have an opportunity to move our focus back to the question of how technology can serve us all, and what ways we can get there. As Rushkoff puts it: "those of us without the funding to consider disowning our own humanity … don't have to use technology in such antisocial, atomizing ways" (Rushkoff 2018).

Perhaps a useful path moving forward would be to not ignore "space" but consider how it, like our planet and species, might be re-considered in relation to the collective precarity by which we live.

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We have explained how the super-wealthy look to the sky, stratosphere and interplanetary realm as a place to escape collapse, not so different from their Dr. Strangelove-like bunkers and super yachts. Although space is being falsely proselytized as an alternative to the here and now, as a way out of the dangerous excesses of late capitalism by those who have most profited off of such a system, that's not how space has been treated by nearly anybody else throughout the millennia. Space in many traditional and indigenous cultures is relational to planetary living. Indigenous astronomy, from most every traditional culture in the world, sees space and the cosmos dialogically with our planet, our bodies, our minds and beliefs. Our practices of living, our relationships to our land, are interconnected with outer space. One is not the delusional panacea to the other; they dialectically inspire and cohabitate.

From those obsessed with outer space and the aim to leave the damaged Earth behind, we see a similar, absurd attachment to the freeing of our minds from our fragile, weak bodies. Many of our technology thought leaders and innovators see our physical bodies as encumbrances, believing we can and should merge our consciousness with the computer in a sort of *cupio dissolvi* (or the wish to be dissolved into a cyborg deity) for the digital age. But how can there be knowledge, much less ethics, without embodiment? Do our minds really exist outside our bodies? Are not our minds intimately tied to the peoples, places and times we inhabit or interact with? How can a machine, unable to feel pain, be expected to act within a moral code that it cannot relate to?

As the curtain rises on what might be the final act of late capitalism, we remain in suspense, much as our Greek ancestors thousands of years before, waiting for a savior, a *deus ex machina*, to be lowered onto the stage. But it's time to step out of the disabling ruse of inevitability, weakness and helplessness we have fallen into and push aside the fear of the unknown that has allowed a few cynical "innovators" to create a future in which we have even less power, agency or ways to keep them accountable. What if we instead looked at each and every new technology from a place of collective criticality, engaging in robust dialogue around what we are doing? What if we opened up the most interesting space of all: the one where we allow different communities across the world to direct their own digital destinies? Why don't we ask whether we should be creating certain

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technologies, and if so for whom and for whom not? Who builds and profits from these systems? What is their mindset and agenda? We must step away from delusional techno-inevitability and toward a path of collective power and imagination.

There are a few concrete ways we can do this.

At the end of the day, we must consider who technology serves and who it objectifies, instrumentalizes or threatens. It is hard to imagine different outcomes without a major, sweeping change to the ways technology development is funded. We should rethink who makes design, engineering, social and political decisions regarding the development and roll-out of technology, in ways that are win-win, rather than ones that elevates oligarchic gain over everyone else. Our current mode of speculative investment is incompatible with putting pro-people and pro-planet goals at the forefront. We must reorient our vision for technology away from the extraction of Earth's limited energy and mineral resources and demeaning, physical and virtual sweatshop labor to one that creates value for people and contributes to healing the planet. It's time to do away with the absurd myths of transcendence and speculative longshots when it comes to the technologies that so deeply impact our lives.

Another important shift is to close the distance – physically, socially and politically – between those that develop and roll out technology and those whose lives are subject to it. We must stop elevating and enriching tech "innovators" whose approaches toward such innovation is unsustainable and costly to almost anyone but themselves. We should be careful with whom we entrust the keys to our future. It is simply untenable for our society to continue to rely on the whims of cynics and misanthropes to helm our collective ship into the future.

There are people, communities and organizations all over the world doing the kind of innovation that we would like to see. We mentioned Eric Lundgren above in this piece, and he is but one of so many examples revealing how technologies can honor our planet, workers and the spirit of resourcefulness. That example is about repurposing and reusing technology that has already been developed, sold and used, generating value for new users and keeping it out of landfills for as long as possible. At this very moment thousands upon thousands of 2G, 3G and 4G base-stations are being ripped down to make way for 5G. Much of that equipment can easily be reconfigured to work

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with free and open source software and could be installed in unconnected communities. Instead most of it will rust in an e-waste graveyard, likely somewhere in Africa, further threatening our planet and species. This type of "recycle and repair" creativity must be coupled with regulation that ensures people are not only able to fix and repair their devices but that minerals and other primary resources are sourced and extracted responsibly. Furthermore, technology must be designed to last as long as possible, removing planned obsolescence completely from the tech business model.

Much of this piece has looked at infrastructures, so it is crucial that we question why, in most places on earth, it is difficult, expensive and illegal for communities and everyday people to build their own communication networks. As we have seen above, LEO satellite constellations and 5G networks are incredibly complex and expensive, meaning they can likely never be built or controlled by everyday people to ensure fair prices, or the protection of personal information. But with a "digital bill of rights" (Srinivasan 2020) for the world, including more favorable regulation, people could get more involved, through collectives, municipalities or even sets of small businesses or cooperatives. Imagine if the $2.7 trillion supposedly needed for 5G was invested in participatory ways to support building networks where people want and need them, and that included communities and the public in the governance of the networks and their data.

We live in a time where proposals to combat the gross inequalities of our planet are more popular than ever. Universal basic income, as a means of re-directing the flows of profits and wealth away from plutocrats toward a more balanced society, is wildly popular, and has become a reality, at least temporarily, around the globe during the coronavirus pandemic. There is substantive conversation about digital enterprises and cooperatives that give their workers greater equity in the business (Platform Cooperativism Consortium 2021); imagine an Uber-type company but one in which the drivers are able to share in the company's value. Upwards of two-thirds of Americans support regulating, if not altogether breaking up tech monopolies like Amazon or Facebook (Stewart 2019). Proposals around paying people for their data are now on the mainstream stage, as well (Hautala 2019).

These discussions are bubbling up, yes, but at the same time, as we follow the money, we see greater and more absurd speculative investment into futures in which most of us do not matter and do

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not exist. We see billions upon billions of dollars poured into initiatives that further lock people into echo chambers of psychological and behavioral manipulation and constant 24-7-365 surveillance. We see the destruction of journalism as disinformation reigns supreme, elevating authoritarians and neo-fascists to positions of great power. We are witnessing the socializing of all the costs and pain, and the privatization of all the profits in the hands of those who have such little faith in the rest of us or the planet that birthed them. It's time for a digital future where all of us can thrive.

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Digital Sovereignty

Julia Pohle and Thorsten Thiel

Abstract

Over the last decade, digital sovereignty has become a central element in policy discourses on digital issues. Although it has become popular in both centralized/authoritarian and democratic countries alike, the concept remains highly contested. After investigating the challenges to sovereignty apparently posed by the digital transformation, this essay retraces how sovereignty has re-emerged as a key category with regard to the digital. By systematizing the various normative claims to digital sovereignty, it then goes on to show how, today, the concept is understood more as a discursive practice in politics and policy than as a legal or organizational concept.

In July 2020, the German government, in its official program for its presidency of the European Council, announced its intention "to establish digital sovereignty as a leitmotiv of European digital policy" (The German Presidency of the EU Council 2020, 8). This is just one of the many recent episodes, albeit a very prominent one, in which the term *digital sovereignty* has been used by governments to convey the

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idea that states should reassert their authority over the internet and protect their citizens and businesses from the manifold challenges to self-determination in the digital sphere.

At first glance, the digital transformation and the global technical infrastructure of the internet seem to challenge sovereignty. The principles of territoriality and state hierarchy appear opposed to the diffuse, flexible, forever shifting constellations of global digital networks. What is more, digital applications and communication practices have created a momentum that seems to defy legal governance and control. Therefore, the growth of digital networks in the 1990s made the disappearance of the state an immediately plausible scenario. This was most famously captured in John Perry Barlow's bold *Declaration of the Independence of Cyberspace* (Barlow 1996). Yet, while this reference is still very much alive in public discourse, today it is more often framed as a threat than a promise. To counter risks to their authority, states have made it possible to enforce national laws and undertake governmental interventions in the digital sphere. Over the years, they have created and reformed technical and legal instruments to address issues of digital governance (Goldsmith and Wu 2006). In addition, they have successfully convinced their publics that sovereignty and state authority are necessary to protect "vital goods" ranging from security to prosperity, cultural rules and media control. As a result, in many countries, citizens today expect their governments to protect their privacy online or to combat online disinformation and cybercrime. But the various calls for digital sovereignty in the last few years, in both centralized/authoritarian countries and liberal democracies, do more than reaffirm state authority and intervention in the digital sphere. The concept of digital sovereignty has become a powerful term in political discourse that seeks to reinstate the nation state, including the national economy and the nation's citizens, as a relevant category in the global governance of digital infrastructures and the development of digital technologies. We can expect the concept of digital sovereignty to continue to gain even more political currency in the years to come, given the broad deployment of highly invasive digital technologies, ranging from artificial intelligence to the "Internet of Things."

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To date, the concept of digital sovereignty has been widely used in political discourse but rarely scrutinized in academic research, with a small but growing number of exceptions (Couture and Toupin 2019; Mueller 2010, 2019; Pohle 2020c; Pohle and Thiel 2019; Thiel 2014, 2019; Glasze and Dammann in press; Peuker 2020). To understand where the concept comes from and where it is headed, we proceed in two steps. First, we reconstruct key controversies that define the relationship between sovereignty and digital networks. We then analyze how the concept of sovereignty and statehood re-emerged such that digital sovereignty was elevated to a cherished form of sovereignty in its own right. Secondly, we systematize the various claims to digital sovereignty, thereby highlighting the concept's internal tensions and contradictions. By tracing the dynamics of politicization we attempt to show that sovereignty is a discursive practice in politics and policy rather than the legal and organizational concept it is traditionally conceived of.

The relationship between sovereignty and the digital: a reconstruction

The political concept of sovereignty, understood as the power enjoyed by a governing body to rule over itself, free from any interference by outside sources or bodies, is derived from the Latin word *superanus*, which means "over" or "superior." The traditional theory of sovereignty was proposed in the 16th century by French political philosopher Jean Bodin and concerned the ruler's authority to make final decisions. Jean-Jacques Rousseau recast the concept so that it focused on popular sovereignty rather than monarchical sovereignty. Over time, it became increasingly associated with democracy, the rule of law and territoriality. Today, sovereignty always primarily means a state's independence *vis-à-vis* other states (external sovereignty) as well as its supreme power to command all powers within the territory of the state (internal sovereignty). Understood as democratic sovereignty, it encompasses popular sovereignty and citizens' right to exercise self-determination by making use of their inalienable rights. Crucial to all of these meanings is a geographical specification, that is, the restriction of sovereignty to a specific territory, which is seen

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as a functional prerequisite for authority to be exercised effectively (Grimm 2015).[1]

Ever since Bodin, sovereignty has been seen as a central concept for understanding politics. But in the 1990s, this importance seemed to wane, leading to talk of a post-sovereign world in which states would no longer be the most important and ultimately superior source of power. In this world, democracy would be more closely associated with pluralism and participation than with the capacity of a demos to govern itself (MacCormick 1999). This predicted decline in state importance strongly influenced the early stages of the internet's development and governance. The idea of state sovereignty was particularly challenged by two different, yet related, discursive strands that significantly shaped public and academic discourses: *cyber exceptionalism* and *multi-stakeholder internet governance*. Yet, in more recent years, policy actors have successfully sought to justify and reaffirm sovereignty in the digital sphere against these two perspectives.

Two challenges: cyber exceptionalism and internet governance

The first challenge, *cyber exceptionalism*, suggests that the digital realm is qualitatively distinctive from the analogue world and that digital spaces therefore need to be treated differently from all previous technological innovations. This perspective was especially popular during the rise of the commercial internet in the 1990s but is still evident in public and academic discourse. Cyber exceptionalist thinking is based on the assumption that the growing importance of computer-aided network communication implies the demise of state sovereignty (Katz 1997). Although the internet's actual development did not take place outside of concrete legal spaces and would not have been possible without the incentives provided by markets, regulatory regimes

1 Over the last decades, there have been many attempts to apply the concept of sovereignty to other political entities than states, such as supranational and subnational institutions or indigenous peoples (e.g., Kukutai and Taylor 2016). These derivative usages of the term often equalise sovereignty with autonomy and thereby deemphasise aspects of control and legitimation. While we believe that these broader understandings are important and can partly explain the popularity of the concept of digital sovereignty, we stick to a more traditional political understanding of the term.

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or public research infrastructures (Mazzucato 2011), cyber exceptionalism – which most often takes the form of *cyber libertarianism* (Keller 2019) – nevertheless remained the formative ideology in those early days with a strong cultural and economic backing in Silicon Valley (Barbrook and Cameron 1996; Turner 2007).

As actors who greatly distrust established political institutions, cyber libertarians argue that digitally mediated forms of politics will prompt a societal reorganization that is decentralized. This should, in their view, enable a better tailored response to the complex demands of governing modern societies than that which is offered by traditional forms of political organization. In this view, external sovereignty, law and territoriality are expected to matter less in the context of transnational networks. The arguments for this are manifold. First, the complexity of nested responsibilities and the global reach of networks cannot be addressed properly within national jurisdictions; second, legislative procedures are too slow to keep up with the pace of innovation of digital technologies and the associated business models; and third, digital technologies enable individuals to evade liability, because attribution becomes a shaky construct in the digital world (Post 2007). Hence, in contrast to a world bound by territories and sovereign nations, the world invoked by cyber libertarianism requires the existence of *cyber sovereignty*, with *cyberspace* as a new and autonomous virtual realm that is independent of governmental interference (Barlow 1996).[2]

The cyber exceptionalists and cyber libertarian positions still resonate today – for example, in the debates about cryptocurrencies (Pistor 2020). But the main claim, namely that the rise of digital networks per se will lead to a demise of territorial conceptions of sovereignty, has lost its attraction. The infrastructures and the management of digital communication have steadily been transformed, making it easier to observe and steer digital flows. This trend has been reinforced by the commercialization of the internet, as it has given rise to walled gardens and created new agents interested in a fine-grained, less anonymous and less horizontal architecture, which

2 A less pointed but still deeply state-sceptical variant of cyber exceptionalism is networked independence, a discursive stream frequently found in legal discourse and aligned with the discourse on globalisation and global governance. It argues that state sovereignty is in decline because of the dysfunctional fragmentation of a static order bound to geographical territories (Johnson and Post 1996).

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allows for intervention at many points (DeNardis 2012; Deibert and Crete-Nishihata 2012).

At least from the year 2000 onwards, a second, related but less confrontational challenge to sovereignty in its original sense emerged: *multi-stakeholder internet governance*. Here, the focus is not on states' shortcomings at regulating digital matters but on the different and non-sovereign roles that states have to play in a regulatory ideal that views the administration of the internet as the task of those directly affected by it. Taking their origins in the technical community, characterized by expertise and meritocratic decision-making, a multiplicity of decentralized processes emerged, which were designed to serve the development and application of shared norms, rules and procedures to maintain and develop the internet (Klein 2002; Chenou 2014). In this vision, self-governance would take place in a multi-stakeholder governance structure based on the principles of openness, inclusion, bottom-up collaboration and consensual decision-making. This form of coordination, it was argued, could counteract the need for a central decision-making authority (Hofmann 2016; Raymond and DeNardis 2015).

While multi-stakeholder internet governance has become established as a relatively autonomous field in the global policy arena, it is characterized by conflicts of various kinds. Its external conflicts are often rooted in the fact that the multi-stakeholder governance model continues to explicitly reject established government-dominated international institutions and seeks to replace them with the principle of transnationalism. Conversely, representatives of some states have insisted on putting the authority to make binding decisions on internet governance issues in the hands of multilateral institutions and, hence, subjecting them more heavily to state control (Musiani and Pohle 2014; Glen 2014). Internal conflicts in the field are caused by increasingly obvious coordination problems due to the multitude of often parallel internet governance processes as well as the thematic shift away from primarily technological matters towards more openly political or social questions (Malcolm 2008). Furthermore, the idea of multi-stakeholder internet governance has often been accused of being associated with neoliberal thinking (Chenou 2014). Thus, hopes of a lasting or expansive change in how transnational politics is done have not been fulfilled. Given the increasing attempts of both authoritarian and democratic nations to more strongly regionalize the

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development of digital networks, it is doubtful whether the efforts towards reforming multi-stakeholder internet governance will find the acceptance that would be necessary to preserve the model and its principles (Voelsen 2019b). Therefore, multi-stakeholder internet governance cannot be seen as the future of governance as such, nor as a dichotomous alternative to decision-making by sovereign states, but rather as a parallel governance model adapted for non-binding coordination processes.

Resurgence of sovereignty as a principle of digital policy-making

In many respects, the public imaginary of digital communications as somehow hostile to state sovereignty, and the practical challenges of enforcing sovereign power in the digital realm have remained (Mueller 2010). But the arguments for dismissing state sovereignty have significantly weakened; instead, various actors have started to proclaim the need to establish sovereignty in the digital realm. The justifications for these calls are manifold.

First, it is often argued that the real challenge to state sovereignty is no longer to be found in the amorphous organizational qualities of decentralized networks, but instead in the enormous power of the corporate actors that thrive in our commercialized internet environment, where they now hold the material and immaterial power of owning vital societal structures. The internet's commercial focus has come to center on advertising and the exploitation of network effects (Christl 2017). Intermediaries and digital platforms play such a dominant role in making content available that the open internet protocols that digital communications rely upon have become meaningless (Pasquale 2016; Srnicek 2017; Hindman 2018). Today, it is not just the enormous resources that those intermediaries command, it is how they exercise control that makes them one of the biggest challenges to the concept of democratic sovereignty (Staab 2019; Zuboff 2019). Internet corporations provide the infrastructures of our societies and therefore interfere with state matters at highly sensitive points. Examples abound: whether we are talking about the creation and regulation of markets or the provision and structuring of public communication, today's digital economy significantly differs from older constellations for ordering societies – to a point where many of the powerful corporate actors can be described as quasi-sovereign.

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The emergence of these corporate powerhouses, which appear to be largely unaccountable via traditional political mechanisms, has – especially in Europe – given rise to a new, more structural and often more expansive thinking about the demands and domains of democratic self-governance (van Dijck 2020).

A second justification for enlarging and pushing digital sovereignty becomes most obvious when we look at the slightly paradoxical response of governments to Edward Snowden's 2013 revelations regarding the massive global surveillance practices of the United States' intelligence services and their allies (Tréguer 2017, 2018; Steiger et al. 2017). Snowden revealed the mostly unconstrained exercise of hegemonic power and the enormous possibilities for data gathering, data analysis and data control by intelligence agencies and tech companies in the United States and other Western countries. Surprisingly, their decision to behave as sovereign yet non-territorial entities did not lead to a critique of power agglomeration as such (Hintz and Dencik 2016). Instead, it triggered the demand for a decoupled digital sphere that allows for exclusive national control over communications, data and regulation. Ever since the Snowden revelations, demands for national (or regional) digital sovereignty are invoked by actors who highlight the risks of foreign surveillance and manipulation by citing examples ranging from disinformation (Tambiama 2020) to telecommunication infrastructure (Voelsen 2019a) and industrial policy (Hobbs et al. 2020).

If we sum up the observations made so far, we can see how (state) sovereignty, traditionally thought to be the bedrock of modern politics, has become a contested concept. Yet, it then slowly but forcefully found a way to accommodate itself in the digital age. Nowadays, justifications for insisting on sovereignty abound. Especially in international relations, we can see a resurrection of sovereignty as a geopolitical claim, which has set in motion a race to establish and expand the scope of sovereignty. Nevertheless, digital sovereignty needs to be actively explained and adjusted in order to fit our networked societies with their wide range of communications, strong transnational ties and pluralist understandings of democracy.

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Political discourse(s) on digital sovereignty

Today, the concept of digital sovereignty is being deployed in a number of political and economic arenas, from more centralized and authoritarian countries to liberal democracies. It has acquired a large variety of connotations, variants and changing qualities. Its specific meaning varies according to the different national settings and actor arrangements but also depending on the kind of self-determination these actors emphasize (Pohle 2020c; Lambach 2019; Wittpahl 2017). Focusing on this last factor, we can systematize digital sovereignty claims by distinguishing whether they address the capacity for digital self-determination by states, companies or individuals. What the different discursive layers resulting from this variety of claims share is their prescriptive and normative nature; rather than referring to existing instruments or specific practices, they usually formulate aspirations or recommendations for action.[3]

State autonomy and the security of national infrastructures

In the most prominent category of digital sovereignty claims, the emphasis is on the idea that a nation or region should be able to take autonomous actions and decisions regarding its digital infrastructures and technology deployment. The majority of these claims relate to the geographical restriction of sovereignty to a specific territory and to states' efforts ensuring the security of digital infrastructures and their authority regarding digital communication matters pertaining to their territories and citizens.

We can identify two strands of this line of thinking. On the one hand, powers outside of the liberal world have experienced the rise of networked communication as a threat to existing political systems. China was the first country to respond to this by propagating and developing its idea of digital sovereignty – mostly framed as *cyber sovereignty* or *internet sovereignty* (Creemers 2016, 2020; Jiang 2010; Zeng et al. 2017). The underlying ideas were later adapted by other authoritarian and semi-authoritarian countries, most

3 The proposed systematization results from a structured qualitative analysis of selected policy documents applying the word digital sovereignty and similar terms (such as tech sovereignty, digital resilience, digital autonomy, etc.), which does not claim to be comprehensive. We use selected examples of policy texts and proposed measures to illustrate the different layers of digital sovereignty claims.

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prominently Russia (Budnitsky and Jia 2018; Stadnik 2019; Nocetti 2015). On the other hand, early on, Western states also addressed the need for control and independence in digital matters. Here the justification for creating architectures of control was mostly security-driven. As global networks emerged, states became more and more aware of their vulnerabilities, expressed in matters of infrastructural control. Computer security was then translated into national security and expanded to ever more areas (Nissenbaum 2005; Hansen and Nissenbaum 2009). In this process, the role and capacities of democratic states and of infrastructural control has grown immensely (Cavelty and Egloff 2019) – although often times these practices have conflicted with liberal-democratic ideals of society and older understandings of technology as inclusive and pluralistic (Möllers 2020). Since the 2013 Snowden revelations, the focus on state autonomy and security has become a core element of digital sovereignty discourses.

Prime examples of government-fostered practices and ideas resulting from this discursive strand are the many recent proposals towards data localization. They seek to restrict the storage, movement and/or processing of data to specific areas and jurisdictions. The justification is typically the need to limit the access that foreign intelligence and commercial agencies may have to specific types of data, for example, industrial or personal data. It is often assumed, but rarely clearly stated, that many such proposals are also driven by other motivations, such as the increased accessibility of citizens' data by intelligence actors and law-enforcement agencies, and the wish to generate revenues for actors, like local internet service providers (Chander and Le 2015; Hill 2014). In many countries, including Brazil and India – two important emerging economies – proposals towards data localization have so far only been realized in fragmented form or remain limited to specific contexts (Panday and Malcom 2018; Selby 2017). An emblematic case of a proposed data localization initiative in Europe is the *Schengen Routing* idea, that is, the proposal to avoiding exchange points and routes outside of Europe for routing data flows within Europe (Glasze and Dammann, in press, 11). The idea, which was proposed by Deutsche Telekom, the largest internet provider in Germany and the largest telecommunications organization in the European Union. It was hotly debated both in the public and

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the political sphere but ultimately failed to garner sufficient political support (Kleinhans 2013).

Present in both authoritarian and democratic countries, claims and proposed measures emphasizing the autonomy and self-determination of states and the security of critical digital infrastructures have been met with fierce criticism. Both policy actors and observers, such as academics and technical experts, fear that efforts focusing on IT security and the regulation of internet issues on the national level would interfere with the open and universally accessible nature of the internet (Maurer et al. 2014) and ultimately lead to the *re-territorialisation* of the global internet, causing its *fragmentation* into national internet segments (Drake et al. 2016; Mueller 2017). This, in return, may have important negative economic and political impacts for the countries concerned due to their digital and geographical isolation (Hill 2014).

Economic autonomy and competition

There is a second category of digital sovereignty claims, which is closely related, yet different from the focus on state autonomy. This emphasizes the high and often opposing economic stakes surrounding the digital environment and focuses on the autonomy of the national economy in relation to foreign technology and service providers. Like the previous category of assertions, claims focusing on economic self-determination have been primarily spurred by the perceived market dominance of technology companies from the United States and increasingly also China (Steiger et al. 2017, 11). Likewise, the specific measures and instruments that governments apply to compensate for these imbalances in the digital economy partly overlap with measures seeking to strengthen the security of technological systems and national autonomy (Baums 2016). But in contrast to the first category, these measures are usually part of a nation's larger economic and industrial policy strategy, aiming at the digital transformation of entire sectors of the economy. As such, they concern both traditional industries and sectors (telecommunications, media, logistics) and new IT-related economic sectors, and primarily aim to promote the innovative power of the domestic economy and to nurture local competitors (Bria 2015). In addition, a growing number of instruments center on digital trade and seek to regulate commerce and data flows delivered via digital networks (Burri 2017; Ferracane 2017).

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A prime example of an initiative that seeks to strengthen economic autonomy is the European cloud service Gaia-X, which was announced jointly by France and Germany in 2019 and is yet to be launched (BMWi 2020). The project plans to connect small and medium-sized cloud providers in Europe through a shared standard that allows them to offer an open, secure and trustworthy European alternative to the world's biggest (often US-based) cloud service providers (e.g., Amazon, Google, Microsoft), while at the same time respecting European values and data protection standards. The initiative is heavily promoted by policy actors as an important step towards European *data sovereignty* (BMBF 2019a; Summa 2020) – another closely related concept. But it has already been criticized for being an overly ambitious and purely state-driven project that does not offer real innovation and that will have to compete for market acceptance with more established providers (Lumma 2019; Mahn 2020).

As with the previous category, the goal to achieve more independence from foreign technologies and to promote the innovative power of the domestic industry is a central element of discourses on digital sovereignty in both authoritarian and democratic countries. In democratic countries, some measures are additionally justified by the aim to protect consumers by offering technological services that respect user rights and domestic laws and norms, such as data protection regulations (Hill 2014; Mauer et al. 2014, 8). In many emerging economies, such as India, the proposed measures are also often clearly directed at what has been described by both policy actors and scholars as *digital imperialism* or *digital colonialism*. Both terms refer to the overly dominant position of Western technology corporations in the Global South which leads to new forms of hegemony and exploitation (Pinto 2018; Kwet 2019; PTI 2019). Unsurprisingly, such claims and initiatives have been met with skepticism and repudiation by some Western countries, where policy and business actors have been quick to label such ideas and practices *digital protectionism*, meaning the "erection of barriers or impediments to digital trade" (Aaronson 2016, 8; see also Aaronson and Leblond 2018). But while in the United States, where the notion of digital sovereignty has principally a negative connotation (Couture and Toupin 2019, 2313), a wide variety of policies are considered potentially protectionist – including censorship, filtering, localization and intellectual property-related measures and regulations to prevent disinformation and to protect

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privacy, in other regions and countries, such as Europe and Canada, narrower definitions of sovereignty have been proposed that account for specific trade restrictions due to privacy concerns and cultural exceptions (Aaronson 2016, 10).

User autonomy and individual self-determination

In recent years, a third category of digital sovereignty claims has emerged. This is primarily present in the discourses of democratic countries and a particularly strong component of the policy debate on digital sovereignty in Germany (Pohle 2020a, 7ff.; Glasze and Dammann in press, 13). Emphasizing the importance of individual self-determination, these claims focus on the autonomy of citizens in their roles as employees, consumers and users of digital technologies and services. An interesting aspect of this category is the departure from a state-centered understanding of sovereignty. Instead of viewing sovereignty as the prerequisite to exercise authority in a specific territory, actors here view it as the ability of individuals to make decisions in a conscious, deliberate and independent manner and take action accordingly. By strengthening these capacities, individuals should be protected as consumers and strengthened in their rights as democratic citizens (Gesellschaft für Informatik 2020; VZBV 2014). Discursive claims by policy makers and civil society actors in this category also refer to *user sovereignty* and d*igital consumer sovereignty*, thereby replacing the control of users and citizens under digital sovereignty measures in sovereignty notions espoused by authoritarian regimes with the goal to strengthen domestic internet users' capacity for self-determination (Pohle 2020c, 8ff.; SVRV 2017).

The proposed means to achieve this kind of sovereignty in the digital sphere include economic incentives for user-friendly and domestic technology development, but also the introduction of technical features allowing for effective encryption, data protection and more transparent business models. In addition, a large majority of measures targeting individual self-determination seek to enhance users' media and digital literacy, thus strengthening the competences and confidence of users and consumers in the digital sphere. In Germany, for example, a recently created innovation fund by the Federal Ministry of Education and Research (the "Human-Technology-Interaction for Digital Sovereignty" fund) builds on the idea that digital literacy means more than being technologically knowledgeable or

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competent in the use of digital tools. Rather, it is understood as the critical or conscious engagement of users with the technology and their own data (*Datenbewusstsein*, see BMBF 2019b).

An interesting aspect of this discursive category of digital sovereignty is the references made to users' technological or digital sovereignty made by tech activists and social movements. Their perspective contradicts a state-centered understanding of sovereignty and instead emphasizes the need for users to better understand commercial and state powers in the digital sphere and to appropriate their technologies, data and content (Couture and Toupin 2019, 2315ff). This could either be done by prioritizing open and free software and service or by users themselves protecting their personal data from exploitation by tech companies through data protection and encryption practices (Haché 2014, 2018; Cercy and Nitot 2016). While some facets of this perspective and some of the proposed measures may align with the claims to individual self-determination that we can see in democracies, the underlying beliefs are, however, different. Moreover, references made and measures suggested by policy makers seeking to increase user sovereignty need to be evaluated very carefully. In many instances, citizens are being reduced to consumers of digital services rather than valued in their capacity as democratic citizens. But the focus on the autonomy and security of consumers might obfuscate measures that primarily serve security and economic purposes, leading to a situation in which fundamental user rights – such as privacy or freedom of expression – are restricted rather than enforced.

Sovereignty in the networked world

This essay has argued that advocates of the concept of digital sovereignty, so popular in political and public discourse nowadays, not only had to reverse some of their early beliefs about the governability of a networked world but that the idea of sovereignty itself has shifted as it has risen to prominence. The issue is no longer *cyber sovereignty* as a non-territorial challenge to sovereignty that is specific to the virtual realm of the internet. Today, *digital sovereignty* has become a much more encompassing concept, addressing not only issues of internet communication and connection but also the much wider digital transformation of societies. Digital sovereignty is – especially in Europe – now often used as a shorthand for an ordered,

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value-driven, regulated and therefore reasonable and secure digital sphere. It is presumed to resolve the multifaceted problems of individual rights and freedoms, collective and infrastructural security, political and legal enforceability and fair economic competition (Bendiek and Neyer 2020).

Traditionally, sovereignty has largely been thought of as an enforceable law that is backed by clear structural arrangements, such as the state monopoly on violence. In this context, the state is conceived of as a more or less coherent actor, capable, independent and hence autonomous. Although sovereignty has always been imperfect – Stephen Krasner famously depicted it as "organized hypocrisy" (Krasner 1999) – the means of sovereign power in the Westphalian system have been rather straightforward. But the situation has become more complicated due to digitalization, globalization and platformization. The digital sovereignty of a state cannot be reduced to its ability to set, communicate and enforce laws. Rather than relying on the symbolic representation and organizational capacity of the state, digital sovereignty is deeply invasive. In many instances, the idea of strengthening digital sovereignty means not only actively managing dependencies but also creating infrastructures of control and (possible) manipulation. Therefore, we believe that much more reflection and debate is needed on how sovereign powers can be held democratically accountable with regard to the digital. It is not sufficient to propose that the power of large digital corporations could be tamed by subjecting them to democratic sovereignty, as has been suggested by many democratic governments worldwide. Likewise, we should not simply equate (digital) sovereignty with the ability to defend liberal and democratic values, as is often done by policy actors in Europe. Digital sovereignty is not an end in itself. Instead, we have to put even more thought into the procedural framework of how sovereign power can be held accountable and opened up to public reflection and control in order to truly democratize digital sovereignty.

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Algorithmic Sovereignty beyond the Leviathan and the Wicker Man

Sandboxes for Tactical and Participatory Automation

Denisa Reshef Kera

Abstract

The metaphors of the Leviathan and Wicker Man introduced the idea of a modern state as an artificial and mechanical rather than spiritual unity. They framed sovereignty as an effect of the artificial and technical apparatus described as a social contract limiting the personal agency of the citizens or even sacrificing it to serve the new collective identity. The discussions of these metaphors of sovereignty and body politic offer an important context for understanding the present issues with smart contracts and algorithmic governance as the embodiments of the Leviathan (Reijers, O'Brolcháin, and Haynes 2016) or Wicker Man. The new forms of automation deprive the citizens of personal and social agency and limit their abilities to decide, regulate or envision the future, but in a different, less transparent way than the social contract. While citizens willingly limit their agency under the original social contract to create an artificial but collective unity, the new algorithmic "smart contract" reduces sovereignty to code that someone can design, own and even patent. To support the

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engagement of citizens in the design and regulation of the new governance infrastructures, we need to rethink the concept of algorithmic sovereignty beyond the metaphors of the Leviathan and Wicker Man. It is essential to provide an environment and a process in which agency of the citizens is sacrificed to code under clear objectives and reasons and in transparent manner. Citizens have to test the connections between the emerging technology and their personal and social agency, infrastructure and regulation, to design the right algorithmic Leviathans. The testing environment that we propose is inspired by the existing regulatory sandboxes in the FinTech and emerging technologies domains (Gromova and Ivanc 2020), which are testing environments connecting various stakeholders responsible for the code and regulations to make decision about the future platforms and services. The sandbox that we created supports prototyping, experiencing and regulating future infrastructure based on smart contracts and blockchain automation as near-future examples of algorithmic governance. The Lithopy sandbox consists of a "testnet" for permissioned blockchain services, a design-fiction movie and a dashboard used in workshops to simulate different aspects of a future automated society. Participants explore various strategies of preserving their social and individual agency while defining the algorithmic sovereignty by regulating the automation and emerging infrastructure. The near-future scenario with the functional code of blockchain and satellite "smart contracts" for an imaginary village (Lithopy) is realistic enough to motivate the participants to engage in what we have described previously as a "regulation through dissonance" (Reshef Kera 2020a). The sandbox is a trading zone for the stakeholders to collaborate simultaneously on contested issues in policy and design. It supports testing and discussing the relationship between regulation and code, social agency and automation without insisting on strong consensus but identifying some *modus vivendi* for the future automated society. In this paper, we summarize the first five workshops in 2019 that changed the focus from issues of anticipatory governance to more pragmatic and experimental approaches of probing and defining a vision for algorithmic sovereignty (and automation) that is situated, tactical and participatory (Hee-jeong Choi, Forlano, and Reshef Kera 2020). The "situated" automation in the sandbox offers an alternative to the current governance-by-design regulatory compliance models (Mulligan and Bamberger 2018; Friedman and Kahn 2002; Michalis

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2015). It critically reflects the present algorithmic governance as the fulfillment of the Hobbesian dream of an artificial (mechanical) governance that erodes social and individual agency. Algorithmic governance embodies the Hobbesian credo that it is "authority, not truth, which makes the law" (*sed auctoritas, non veritas, facit legem*) and defines automation as "authority" based on code (new technical infrastructure). The sandbox experiments with algorithmic sovereignty establish a possibility of tactical, participatory and open future-making processes that connect code and regulation beyond the promises of automation and absolute control.

Introduction

How do we achieve a political unity in an age of blockchain technologies, AI, social media platforms and other wonders of ledgers, algorithms and data that shape and extend the sovereignty and power of the modern state? Are citizens under the algorithmic rule members of a society and body politics based on contracts, norms and laws translated into algorithms and data structures? How do these new technical infrastructures exemplify the absolute power of the Leviathan, a social contract defining super-human and institutional sovereignty?

We claim that the technological "commonwealth" over various platforms defining algorithmic governance supports the idea of the absolute sovereignty of the Leviathan as a governance model but deprives the citizens of agency in more radical ways than the social contract theory had ever imagined (Reijers, O'Brolcháin, and Haynes 2016). Thomas Hobbes's metaphor of artificial and super-human governance served as an alternative to the redemption model of the Middle Age kingdoms searching for spiritual unity with Christ under the eschatological expectations of the second coming. Instead of redemption and "life in Christ" as a promise that will alleviate the suffering of the "natural condition," war and chaos, the modern state offered security and lately also efficiency.

The Leviathan was an alternative to the chaos of the Christian kingdoms guided by the vision of "corpus mysticum," a body of believers in Christ waiting for the second coming. Since every kingdom could claim to be the ideal Christian community with absolute sovereignty, this caused civil wars described by Hobbes as the "natural state" of the war of all against all. To prevent this state of chaos, Hobbes proposed an original solution of replacing the search of a

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spiritual unity (and fighting over who is closer to God) with an artificial one, creating the conditions for our later notions of cybernetic ideas of similarity between animals, machines or states operating as systems. The Leviathan is a product of men rather than a cosmological or theological embodiment and historical mission of the second coming. It is a machine and "command mechanism," a technical apparatus demanding unconditional obedience to work correctly.

Inspired by Carl Schmitt's interpretation of the modern state as a technical, bureaucratic and "magical" mechanism defined by Hobbes, under which nothing is true but "everything here is command," we claim that algorithmic governance is a necessary consequence of the Leviathan. Algorithmic governance brings to a conclusion the most critical aspect of Hobbes's social contract theory – the emphasis on absolute and automatic authority as the only alternative to the natural condition. The algorithmic "Leviathans," such as blockchain "smart contracts" or machine learning algorithms optimizing social phenomena, expect citizens to support, trust and abide by this emerging infrastructure as a "miracle" defined by the state to support its sovereignty against any chaos. The super-individual sovereignty of the emerging technical infrastructure provides essential services and protection only when citizens accept its absolute authority (sometimes defined as smart cities, intelligent tracking systems during COVID-19 crises, and similar ideas).

The algorithmic Leviathans simply achieve the goal of the social contract "automatically" and literally via the data and code of the blockchain platforms, smart contracts, AI and machine learning algorithms, and other optimized systems. These mechanisms outsource the agency and sovereignty of the citizens to such super-human institutions that promise peace, stability and efficiency as the main goals of the modern state (discussed as governmentality and the emergence of "national interests" as *raison d'être* in Foucault). The resignation of natural rights is a necessary condition of all automatized systems paradoxically defined as an "agreement" between rational, free and equal persons by Hobbes. The Leviathan, as the outcome of this paradoxical social contract and later algorithmic governance, is anything but rational or equal. Instead, it places the absolute power with one artificially constructed "sovereign."

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Leviathan or the Wicker Man

The rational agreement between the citizens defining the modern state as such sovereign and artificial Leviathan supports an irrational and absolute power that is automated and mechanical by default and serves as a tool of automated justice and security. The paradox of this contract is even more visible in the case of trustless and automated blockchain systems or machine learning platforms, which most citizens do not even understand. How can we claim there is a rational and free agreement in the case of algorithmic governance? The magic of the Leviathan's algorithmic embodiment only makes more visible the issues with the original metaphor and idea: that rational beings agree on an irrational and absolute control as the only alternative to lawlessness (natural state). The issues with such solutions are that they enforce rather than control the absolute and arbitrary power.

Algorithmic sovereignty over emerging technical infrastructure thus amplifies the old discussions whether the Leviathan is an institution that protects the citizens or sacrifices them in its evil twin, the Wicker Man. The 1676 image by Aylett Sammes of the Wicker Man summarizes the earliest critique of the Leviathan discussed as a pagan ritual similar to the description of human sacrifices by British people by Julius Caesar. They supposedly created an image of a super-human, godlike figure, in which they weaved the living people to burn them. This image served as a satirized social contract, a visually shocking critique of what the civic body (body politics) does to the individual (consumes, imprisons and destroys).

The most famous critique of the Leviathan, however, appears in the 1690 "Second Treatise of Civil Government" (Ch VII/93), in which John Locke describes the absolute sovereignty as a catastrophic lack of governance rather than a solution. To describe the horrors of such automated and mechanical power he uses the allegory of a society avoiding attacks by wild cats by letting the lion rule and devour everyone:

> To ask how you may be guarded from harm, or injury, on that side where the strongest hand is to do it, is presently the voice of faction and rebellion: as if when men quitting the state of nature entered into society, they agreed that all of them but one, should be under the restraint of laws, but that he should still retain all the liberty of the state of nature, increased with power, and made

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> licentious by impunity. This is to think, that men are so foolish, that they take care to avoid what mischiefs may be done them by pole-cats, or foxes; but are content, nay, think it safety, to be devoured by lions.

The present issues with law and code in algorithmic governance echo these discussions about the relationship between sovereignty, power and law, might and right. While automation (absolute authority) for Hobbes is a necessary condition of law to exist, Lock criticizes it as a dangerous precedent that makes law impossible. Automated decision-making that is hardcoded without any human oversight is an heir of a Leviathan idea as mechanical and automated sovereignty. How should we engage with the authority of the code and automated control of the new algorithmic sovereigns (technological platforms as the Lockean lions) and contest their absolute power? How to engage the citizens in the formation of the algorithmic Leviathan without letting the algorithmic beasts devour their data and autonomy while promising to protect them from some small dangers (wild cats)?

The Leviathan as the origin of the cybernetic metaphors and algogovernance

Algorithmic governance – promising efficiency while taking advantage of the citizen data, freedom and agency – is just the latest embodiment of the Leviathan. It is a form of artificial system (a contract as a machine and mechanism) that has absolute authority over the citizens that trade their sovereignty and natural rights for security. In his analysis of the Leviathan, (Schmitt 1996, 50) described this as the emergence of a "state as a mechanism" model that becomes a "manmade product" that is neither holy, just nor ideal but efficient: "Considering the Leviathan as a great command mechanism of just or unjust states would ultimately be the same as 'discriminating' between just or unjust machine."

For Schmitt, it was this idea of a modern state as an artificial and mechanical rather than spiritual unity that enabled all later forms of industrial state to use new technologies as tools of sovereignty. The idea of a state as technical apparatus or what we call nowadays algorithmic governance was born with the Leviathan:

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> The intrinsic logic of the manmade, artificial product "state" does not culminate in a person but in a machine. Not the representation by a person but the factual, current accomplishment of genuine protection is what the state is all about. Representation is nothing if it is not *tutela praesens*. That, however, can only be attained by an effectively functioning mechanism of command. The state that came into being in the seventeenth century and prevailed on the continent of Europe is in fact a product of men and differs from all earlier kinds of political units … (Ibid.)

The Hobbesian modern state leads directly to the present algorithmic (or technological) governance. It is the original prototype of absolute and arbitrary power that nothing can resist because everyone will submit to it willingly: "[T]hat state was created not only an essential intellectual or sociological precondition for the technical-industrial age that followed but also the typical, even the prototypical, work of the new technological era – the development of the state itself" (ibid.).

Schmitt also predicted that a state as a "product of human calculation" would necessarily lead to the automation, a technically perfect mechanism that is synonymous with absolute authority performs its structure:

> But the idea of the state as a technically completed, manmade magnum-artificium, a machine that realizes "right" and "truth" only in itself – namely, in its performance and function – was first grasped by Hobbes and systematically constructed by him into a clear concept. The connection between the highest degree of technical neutrality and the highest authority is, as a matter of fact, not alien to the ingenious thinkers of the seventeenth century. At the end of Campanella's vision of the "Sun State" appears a big ship without a rudder and a sail but driven by a mechanism that is commanded and guided by the possessor of "absolute authority" … (Ibid.)

Algorithmic governance as the modern Leviathan, this "gigantic mechanism in the service of ensuring the physical protection of those governed" was pioneered by the cybernetic and military visions of warships in the past (Campanella) but also present. Schmitt quotes Ernst Jünger's vision of warships as "swimming outposts of enormous

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power, armored compartments, in which the claim to power is compressed in a most narrow space" (ibid.). Campanella's vision of the "Sun State" becomes literal: "The technically perfect mechanism of a big ship in the hands of an absolute authority who determines its course" (ibid.).

Sandboxes for exploring alternatives to the Leviathan

Is there any alternative to this absolute victory of the modern state as an algorithmic machine or cybernetic warship that realizes its sovereignty through its structure and code while claiming to "save" and support the citizens' survival? How might/could we rethink algorithmic sovereignty beyond the image of the Leviathan and its shadow, the Wicker Man?

Instead of insisting on one perfect Leviathan, we propose to multiply them via hybrid regulatory sandboxes as zoos for "dangerous" algorithms that support participants (stakeholders) in understanding them but also experimenting with the gradual process of "domestication." The simulation of decision-making processes that combine blockchain services and smart contracts with the existing policy tools for regulations can help us find some balance between the new algorithmic wilderness and domestication via regulations. Instead of communities yielding power to one powerful super-platform (Lockean lion and Hobbesian Leviathan), we simply need to learn to live with the wild animals that threaten our sovereignty and design an ecology.

The sandboxes and various testing environments for algorithmic services offer a model for how to make the process of automation more transparent but also participatory, so citizens can see, at each step, why and how they decide to sacrifice their sovereignty and outsource it to the code. We tested just such an environment on the example of future services in an imaginary smart village community of Lithopy, to enable participants to understand and prototype smart contracts with regulations over templates and probe issues of bias and justice. The participants explored how to combine technology with existing institutions to support the quest for algorithmic sovereignty beyond the Leviathan and Wicker Man-style automation.

The Lithopy sandbox stands somewhere between a "fairytale with code" and a fully functional prototype of a community using satellite data to trigger blockchain transactions and services. The

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citizens as participants in the workshop use it as a playground to experience and define the degree of automation and regulation, and comfortable levels of personal autonomy and algorithmic governance. While the project's documentation is on the "Digital Dozen" website where it won the Special Jury Award for the best 2020 digital storytelling project,[1] the code for running the simulation and creating such sandbox in a workshop is on Github.[2]

This design and policy playground or sandbox for exploring near-future scenarios of algorithmic governance and automation reflects upon the convergence of blockchain and satellite/drone technologies. It helps the participants to probe the power of the technology while understanding the different possibilities of regulation and getting around the algorithms' power. In this sense, it serves the goal of tactical, situated and "participatory" automation that embeds social and individual agency in the processes of designing the algorithms and transforming "the logic of binary states, yes and no, into the fuzzy states of maybes and perhaps" (Hee-jeong Choi, Forlano, and Reshef Kera 2020).

The sandbox created an environment where we use regulations and code to engage in what we can describe as everyday practice and tactics adapting to the strategy and structure of the algorithmic governance (Certeau 1984). The sandbox becomes an environment for "tactical" and "situated" automation that is also participatory and involves the citizens directly as individuals and as a group:

> These workshops support participation in automation by engaging human participants directly in the creation of technologies that are also used strategically to control their everyday practices through the dominant sociotechnical order but with tactical intention this sense. These participatory workshops make the actual physical production of the boards that is tedious a part of a community bonding experience that supports the peer economy and liberation rather than alienation of labor. (Hee-jeong Choi, Forlano, and Reshef Kera 2020)

1 Digitaldozen, http://digitaldozen.io/projects/lithopy/.

2 Github, https://github.com/anonette/lithopia.

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The design and policy sandboxes are similar to the workshops on making boards in the hackerspaces and maker faire events described in the article on situated and participatory automation (ibid.); they allow citizens to understand directly and participate in the development of the technology. In the case of Lithopy sandbox, we used Hyperledger Fabric blockchain "testnet" on a server, on which it is possible to test the prototypes of smart contracts using open satellite data (from Sentinel 2A and 2B) for various services and automation. The near-future scenarios and contracts shown as a design-fiction movie that participants view to decide on the interventions and changes they want to make in the workshops.

Lithopy: from installation to sandbox

The original purpose of the design-fiction movie and the code was to invite the participants to explore the possibility of anticipatory governance of blockchain technologies by prototyping, deliberating, regulating and modifying the contracts (Reshef Kera et al. 2019). The project used various formats of display and engagement to support this research agenda. It was exhibited as an installation during the Milan Design Triennial (March till September 2019) and the Week of Science and Technology in Prague (November 2019) and offered as a workshop in five locations (Germany, Israel, Bulgaria, USA, Czech Republic) over 2019. In the installation, the visitors watched a split-screen seven-channel design-fiction movie about Lithopy and interacted with the props of large 3D-printed LiCoins with mixed lithium featured in the movie as objects visible to the satellites that indicate change of property but also smart contracts over a dashboard created in a Node-RED environment connecting the various flows of data over open APIs. The workshops concentrated on preventing biases and bugs in the smart contracts after joining and becoming a Lithopian and offering an asset by registering a name over the dashboard added through REST API service to the simulated testnet ledger on the server. The workshop would explain the code of the smart contracts present on Github and support the participants in modifying them over templates. The participants would also experiment with various ways of applying regulation of code (or over the code) via guided templates.

The smart contracts or "codechains" (in the Hyperledger Fabric environment) deployed on the Hyperledger Fabric-permissioned

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blockchain were hosted on the server functioning as a testnet for the whole project. It supported the experience of various technical and governance limits of the closed or permissioned blockchain services and offered to anyone interested in blockchain, satellite or emergent technologies a space to play with and improve them.

The Lithopy installation enabled visitors to experience a typical day in the "smart village" where people sing with 3D printers, follow the prices of cryptocurrencies, satellite position and weather data to trigger various contracts through their dashboard. The ideas were that the citizens of Lithopy use gestures for partnership contracts and land art types of interventions with red cloth visible to the satellites as a pixel of data to change the ownership of a property. They also move around large LiCoins with hidden lithium deposits in the plastic to indicate a transaction and change ownership of the coins visible to the drones and satellites.

These parodically overdone prototypes of near future services that use drone and satellite data for contracts (identity management, partnerships, assets) pushed the current issues with automation and surveillance to its limits. The conceptually and visually rich simulation of a smart village also reflected the lithium and cryptocurrency speculations in the Czech Republic. The message communicated by the "lithium punk" fiction and prototypes or props remained ambiguous. The goal was never to embrace nor criticize blockchain and satellite futures but to move beyond the current discourse on disruption as some form of new technology revelation to find more pragmatic, anticipatory and experimental approaches to algorithmic governance issues.

Most visitors of the installations experienced only the design-fiction movie, dashboard and the set of props. Many of them were unaware that the prototypes are actual functional proof of concept, such as the asset transaction that allows a change of ownership based on 10 x 10m of red cloth, creating a pixel of data for the satellites. In the workshops (5 locations with over 35 participants), everyone was invited to test, modify and play with such services and overcome the fear of code and regulatory tools. The participants would register themselves on Lithopy ledger on the testnet and then try to change the ownership of an asset through a simulated satellite data transaction that could also serve any activist projects claiming symbolic ownership of various natural and cultural resources.

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During these workshops, we realized that the experience is closer to the form of a design and policy sandbox than a set of prototypes and simulations. Only in the workshops did the participants realize that these prototypes are functional and possible, and that motivated them to take the challenge more seriously. These theoretical promises and threats of the disruptive technology became less important than the actions they could take as stakeholders in the collective future of Lithopy. They could see directly how Hyperledger Fabric blockchain smart contracts work on the testnet, including the open API for satellite data and Node-RED interface for connecting the different digital data flows. In three to four hours, they would gain a basic understanding of the code and infrastructure which were "human-readable" thanks to JavaScript code and allow them to experiment with democratizing such "future-making" in a sandbox.

Anticipatory governance of algorithmic Leviathans

The original purpose of Lithopy as an installation, workshop and simulation was to present the possibilities of anticipatory governance of algorithmic futures, and only during the 2019 workshop did we realized that we needed to change the ambition into a more experimental form of governance. How to democratize, anticipate and regulate the emergent challenges of cryptocurrencies, smart contracts and many off-and-on-chain (ledger) interactions became less important than experiencing the issues in an attempt to combine regulation and code. Instead of searching for a well-designed system that makes impossible attacks, misuses and mistakes also described as frictionless and anticipatory design (Monus 2018; Sgarro 2019), the purpose of the sandbox became to show rather than hide the unequal power relations between the stakeholders.

The problem with any technocratic solutions creating algorithmic Leviathans is their democratic deficit that reduces the future citizens to users and subjects rather than active participants. The initial experience from the 2019 workshops led us to define the whole environment beyond anticipatory governance and improvement of user experiences of such future infrastructure. We started to think of it more as an actual design and policy sandbox that supports the participants' social and political agency. The view of citizens as stakeholders (Reshef Kera 2020b) rather than users of various future infrastructures is often ignored or reduced to participatory design issues

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or co-design strategies that deal mainly with well-established rather than emerging technologies. Instead of only asking the participants to define their future stakes in the code and regulation of the future blockchain automated services and prepare the frictionless design, we realized it is more important to define a form of policy that actively promotes such experiments with future infrastructure as tactical and practical adaptation (rather than adoption).

To address the problem with the democratic deficit, we connected the participatory prototyping of blockchain future services over templates with actual voting and deliberating upon the regulations in Lithopy during the workshops. We transformed the whole environment from a simulation or participatory prototyping exercise into a type of experimental governance sandbox for experiencing alternative blockchain and automation futures. In the sandbox, participants could define their stakeholder role or use one of the templates. They experienced and addressed both the code and regulation and discussed them with other participants through their roles. The immersive experience of collectively discussing how the code should be regulated and realizing the limits of citizens agency led to various calls for a "contact" language or an interface that connects better regulation and code.

From the surveys with 20 semi-structured interview questions in 2019, to which only 18 participants adequately responded, the majority demanded auditing and certification services by independent organizations to intervene in the blockchain- and satellite-driven futures. The whole project evolved from passive simulation and installation for experiencing the shock or admiration of future services into a sandbox and testnet for democratizing future-making. The feasible, but still near future scenario about a convergence of satellite and blockchain technologies became a playground for imagining the future as a common good, one in which we have to question the present forms of algorithmic sovereignty.

Simulating, prototyping and sandboxing blockchain futures

The main scenario explored in the workshop was the possible misuses (bias) in selling property that excluded certain nationalities, to which the participants reacted by deciding whether to change the code and impose different forms of regulation. While, initially, we emphasized

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the importance of participants reaching an agreement as a group, during 2019 workshops, it became clear that this is too ambitious. The Lithopy sandbox did not improve the "innovation," as in the case of regulatory sandboxes, offering instead direct agency experience with code and regulation beyond the aura of "expert tools." In this sense, it supported the goal of experimental and experimentalist governance as negotiation and consensus building in a power vacuum where individual stakeholders have to define their interests and relations but also norms and goals on the go (Sabel and Zeitlin 2012; Wolfe n.d.).

While most regulatory sandboxes insist on innovation, the Lithopy sandbox is more of a "trading zone," a productive environment for supporting coordination and exchange of knowledge and resources between dissimilar and even antagonistic stakeholders. We describe this as tactical and situated automation that allows adaptation to rather than adoption of emerging technologies and preserving certain forms of agency. The type of algorithmic sovereignty explored in the sandbox is tactical and situated. It is also plural and offers a variety of scenarios on how to survive and strive in such algorithmic futures while slowly defining a form of social and individual agency.

The result of Lithopy is neither an ideal code nor regulation but an open space for discussion, experience and decision-making that serves the citizens who would like to experience what is their stake in the future of this infrastructure that supports automation algorithmic governance. The environment invites the participants as stakeholders to "trade" and together define their shared future in this tactical and situated way that is supportive of "dissonance." At the beginning and end of every workshop, the participants voted on the future of their community and got such an immediate feedback how their interventions worked and whether they would form a community.

The model for this policy and design sandboxes as a "trading zones" was inspired by the STS scholar, Peter Galison's description of how innovation and discovery, and regulation happen in the case of particle physics in the 20th century (Galison 1997). Galison was able to show how successful exchanges between various stakeholders (scientists, but also policymakers and businesses) depend on preserving their identity and diversity rather than finding a single unified theory, practice, value or institution that makes the decisions. It is not the code nor the values and regulation that define the common

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blockchain future; rather, it's the ability to "trade" with groups and stakeholders whom we do not understand and agree with:

> But here we can learn from the anthropologists who regularly study unlike cultures that do interact, most notably by trade. Two groups can agree on rules of exchange even if they ascribe utterly different significance to the objects being exchanged; they may even disagree on the meaning of the exchange process itself. Nonetheless, the trading partners can hammer out a local coordination despite vast global differences. In an even more sophisticated way, cultures in interaction frequently establish contact languages, systems of discourse that can vary from the most function-specific jargons, through semispecific pidgins, to full-fledged creoles rich enough to support activities as complex as poetry and metalinguistic reflection. (Galison 1997, 783)

The policy and design sandboxes as such trading zones are simply an opportunity for experimental governance. The different stakeholders attempt to create a contact language between code and regulation, the current institutions and future infrastructures, and define further their actions and coordination. The result is not a Leviathan to which they all outsource their sovereignty but rather a tactical and situated attempt to preserve agency while learning how to use the infrastructure for various agendas.

The Lithopy environment was never very robust and stable, and this proved to be important because it let the participants understand the technical limitations of such emerging infrastructure with the ambition to become the future of algorithmic governance. In the first six months between March and September, some 391 Lithopians registered on the testnet to offer a property or partnership, but because of a technical glitch and problems with the Linux server, some 150 Lithopians, their partnerships and assets were deleted in the first digital "genocide" in a June 2019 server crash. A similar disaster also destroyed the next generation of some 241 new Lithopians that offered 48 assets and 91 partnerships registered over the dashboard, but this time everything was saved on an excel sheet. The dashboard data are interesting because they show a disproportioned interest in smart contracts related to partnerships over ownership in this sandbox. The pre-June 2019 ledger data from the simulated nodes are still

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buried somewhere on the server, which inspired an idea for a future workshop in which participants will define future professions, such as digital archeologists or a ledger forensic expert needed for this imaginary community.

The experiments with value exchange and "coins"

To illustrate how the Lithopy sandbox managed to create a trading zone for making surprising connections between regulation and code, programming and deliberating and performing the situated automation, we can use the experience with prototyping of the LiCoin currency. Based on the early workshops, the idea of cryptocurrency and mining as common in the blockchain projects was rejected entirely in favor of the existing genealogical exchanges already happening in the sandbox. The closed, permissioned blockchain services based on Hyperledger Fabric paradoxically allowed participants to explore different notions of ownership connected to genealogy (who owned what and when) rather than monetary or quantitative value.

The Lithopy process that initially involved directors, actors, graphic designers and blockchain developers and only later also participants and the more general public in the workshop, even exhibition visitors, formed the "trading zone" for interaction between various stakeholders over concepts and tools, in our case blockchain, lithium and satellites. The interactions between diverse individuals with different agendas led to the idea of blockchain beyond cryptocurrency applications and experiments with new economic models. While describing the different models of blockchain services, the original participants (core team that made the movie and designed the services) simply expressed a preference for exchanges based on the genealogy of ownership (names of owners) rather than the nominal value of a currency.

The project started with a trip to the mining city of Cinovec in North Bohemia, where we noticed the creative ways the villagers stored and preserved the lithium deposits on their house facades with glittering lithium plasters. These lithium facades made by locals used mining debris in the 1980s, when no one knew it would become a strategic resource and hidden treasure. We modeled Lithopy coins after this secretly stored material on the facades and made it a central point of the metaphysical, political and economic speculations. The LiCoins made from lithium sand mixed with 3D-printable plastic

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created the tokens of "cryptocurrency" that have to be moved around to indicate ownership. Because this idea was difficult to implement and prototype with a 3D printer, we had to create large LiCoins, similar to the famous Pacific Rai stones, allowing to hide the illegally obtained lithium sand inside of them.

The LiCoins, just as the lithium facades, use the old mines' material to reclaim the ownership of the natural resources that is part of the inheritance rather than a market. Instead of a value of the coin, Lithopy ledger stores information about the genealogy of ownership of the coin, referring back to the cosmological origin of the lithium. All transactions in Lithopy emphasize this genealogy over exchange and stewardship over ownership, so there are no cryptocurrency coins, just timestamped data defining the different assets' genealogies. The exchange of money or tokens becomes a more complex interaction beyond quantification.

The blockchain services in Lithopy look more like rituals inspired by various indigenous cultures with different views of exchange of value. For Lithopians, just like Galison's peasants, money is not neutral means for accumulating capital but part of the genealogy of the oldest metal in the universe – lithium – created shortly after the big ban. As Galison shows, the trading zone offers such tactical and situated appropriation of technology or institution, such as money, to serve the opposite goals of the intended ones:

> Funds obtained in certain ways have intention, purpose, and moral properties, though perhaps none more striking than the practice of the secret baptism of money. In this ritual, a godparent-to-be hides a peso note in his or her hand while holding the child as the Catholic priest baptizes the infant. According to local belief, the peso bill – rather than the child – is consequently baptized, the bill acquires the child's name, and the godparent-to-be becomes the godparent of the bill. While putting the bill into circulation, the owner quietly calls it by its name three times; the faithful pesos will then return to the owner, accompanied by their kin, usually from the pocket of the recipient. So, when we narrow our gaze to the peasant buying eggs in a landowner's shop we may see two people harmoniously exchanging items. They depend on the exchange for survival. Out of our narrow view, however, are two vastly different symbolic and cultural systems, embedding

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> two incompatible valuations and understandings of the objects exchanged. (Galison 1997, 804)

In Lithopy, all coins have names and various rituals of exchange in front of the satellites and drones that make these blockchain futures closer to similar indigenous rituals of "baptizing" money or the Pacific Rai stones. The example illustrates what experimental governance of emerging technologies can mean and what is the value of sandbox engagements in material prototyping and political deliberation between different stakeholders.

Summary

Design and policy sandboxing offers a methodology for testing experimental governance of blockchain futures and explores the possibility of tactical and situated automation. The testing environment increases the engagement of citizens in the process of designing and deciding upon the algorithmic sovereignty and future Leviathans. They explore the possibility of tactical and situated automation in the experimental sandboxes by balancing the automation based on code with their personal and social agency. The citizens can decide at each step how much agency they are willing to sacrifice for automation promising frictionless and more efficient futures. By "domesticating" and taming the power of the algorithms and code, they avoid the extreme scenarios of future governance reduced to the Leviathan or Wicker Man. Instead of an efficient state that makes citizen agency obsolete (Leviathan) or even sacrifices it to optimize the system (Wicker Man), the sandbox offers a trading zone for making tactical decisions on the common future. Most importantly, it changes the narrative of disruptive technology into actual experiences with prototyping, deliberating and working together on the common future. Instead of one Leviathan, the experimental policy and design sandbox creates different "forks" and alternative timelines and ledgers of what can happen and how we can distribute power and resources. The alternative metaphor for the participatory and tactical algorithmic sovereignty is this William Gibson's recent metaphor of such alternative timelines and forks as "stubs" (Gibson 2014). Everyone is invited to participate in the sandbox for a limited time and define their own blockchain future that he or she can design by changing the code and regulation, the material prototypes and the "constitution." Every

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workshop or implementation of the Github code as fork or stub can yield a different version of the blockchain and satellite futures until someone decides to implement such convergences for real. In that case, the alternative Lithopy forks as situated and participatory automation scenarios become experimental governance results and provide valuable lessons and comparisons rather than the absolute sovereignty of some Leviathan. The experience with the different futures and scenarios provides tools and examples for further deliberation and decision-making rather than complete loss of agency in some Wicker Man scenario.

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Out of Balance

The Impact of Digitalization on Social Cohesion

Gesche Joost

Introduction

Today, we have reached a tipping point in the public debate on future prospects of the digital society. While overcoming the promises of the early days of the internet for equal access and participation, we are facing a different reality. The danger that digitization amplifies social inequality ever more has become evident. It is one of the most important challenges that we need to address in a global scope when it comes to next level digital policy making. In the last years, we saw an internet out of balance with a growing paradox: As more and more people got access via mobile phones and Wi-Fi, the participation in a digital society did not rise accordingly. In the following, I will analyze some of the reasons for this development by describing the patterns of the digital divide. Furthermore, I will propose the concept of digital sovereignty for citizens as a guiding principle to bridge the gap of the digital divide. To conclude, I will discuss some steps that need to be taken for a pathway towards a more inclusive digital society.

The internet as utopia and dystopia

During my studies in the late 1990s, I was deeply impressed by the early promises of the internet, like many fellows of my generation. This unique endeavor of inventing a decentralized network with free access to knowledge, a virtual space where everybody could re-invent

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him- or herself (or anything in between) seemed fascinating to many of us. Those were the early promises of the Californian Ideology (Barbrook and Cameron 1996), where we believed that a more equal distribution of resources on a global level could be made possible through the new digital technology. We were tech-optimists. Nicholas Negroponte, as one of the thought leaders of the early ages of the internet, put it this way: Digitization "has four powerful qualities that will result in its ultimate triumph: decentralizing, globalizing, harmonizing, and empowering" (Negroponte 1995, 68). This strong ideology prevailed over the last decades and still survived the burst of the first internet bubble at the beginning of the 21st century. We still observe its basic beliefs in the rise of the fablab and maker spaces as well as in publications like "Zero marginal cost society" by Jeremy Rifkin (2014). And indeed, there is still huge potential in the values and sharing principles of open source,[1] in the cheap and easy access to open hardware and open educational resources. Tech4Good, a normative approach using social computing to reach collective goals within communities, is still an intriguing idea – but it is also a quite privileged debate on the role of technologies. We see that the promised self-healing powers of the crowd that were meant to cope with the challenges of the internet did not fix it. Access to the technology as such did not make a change, because the social setting, individual skills and personal motivations were not considered adequately at first sight. Rather on the contrary, we now seem to be entering the "New Dark Age" (Bridle 2018), where the negative aspects of the "new" technology seem to dominate our perception of it. Radicalism and populism are on the rise, and a recent study by the Pew Research Center (Anderson and Rainie 2020) shows that more than half of the international experts that were asked about the future of the internet said that it fundamentally weakens our democracy.

Must we simply accept the tragedy of the digital commons (Matias 2015)? Not quite. Neither the utopian perception of the internet of the 1990s nor the dystopian view of the current debate alone really help in deciding about a future vision of internet governance. Hence, we see the level of urgency rising to define our agenda for an inclusive digital society that can build bridges to the promises of the early days – for more inclusion, participation and equality. In order to

1 See also Claudio Guarnieri's contribution to this volume.

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achieve this, we need to understand much better the societal implications of the digital transformation and define policies and regulations to mitigate the current risks that we are facing – namely the risk that the project of an open digital society is doomed to fail.

The digital divide and the broken social elevator

Scholars have analyzed the fundamental structures of the digital divide (Eubanks 2018) in recent years and reflected on its development. With the rising number of people with access to this technology, we see huge differences in the adoption. Current research is differentiating at three basic levels: The first level, *infrastructure*, describes the individual or collective access to the ICT infrastructure with its hardware and software components, connectivity and stability as well as cost of access. The second level, *competencies*, addresses the skills needed to use ICT and the types of activities people perform online. The third level, *benefits*, where access and skills are given, shows how to use it for the achievement of specific individual or collective objectives (van Deursen and Helsper 2015, 31–32). This might be, for example, finding a better job through the use of social networks on the internet, improving individual skills online or participating in decision-making processes in an e-government setup. The analysis of these structures shows that inequality in digital access leads to inequality in participation and benefits on different levels, e.g., economical level (jobs and financial income), political level (elections and decision-making), social level (network and friends) or cultural level (cyber culture) (van Dijk 2013, 111–15). In our everyday life, these levels are interlinked and depend on each other.

On a global scale, the dominance of these parameters varies across various countries, between cities and rural areas, between socio-economic clusters and cultural setting, concentrating power and profit amongst just a few countries and companies. A recent UN-report emphasized the disparity of the digital economy. Antonio Guterres stated: "We must work to close the digital divide, where more than half the world has limited or no access to the Internet. Inclusivity is essential to building a digital economy that delivers for all" (UNCTAD 2019).

Research supporting his view shows that the prevailing patterns of existing social inequality are mirrored in the digital realm (Ragnedda and Muschert 2013) and, therefore, we see that digitization can act

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as an amplifier for these patterns. If the first two levels, infrastructure and skills, are unevenly distributed amongst citizens, existing social classes are not only reproduced but further divided. There is a danger for social conflicts if the poorest are becoming the underdogs of the digital society, whereas just a few people are gaining extreme benefits from the transformation. Like in a dispersive prism (see figure 1) used to break white light up into its constituent spectral colors, existing social structures of unequal chances might spread through the prism of digitization.

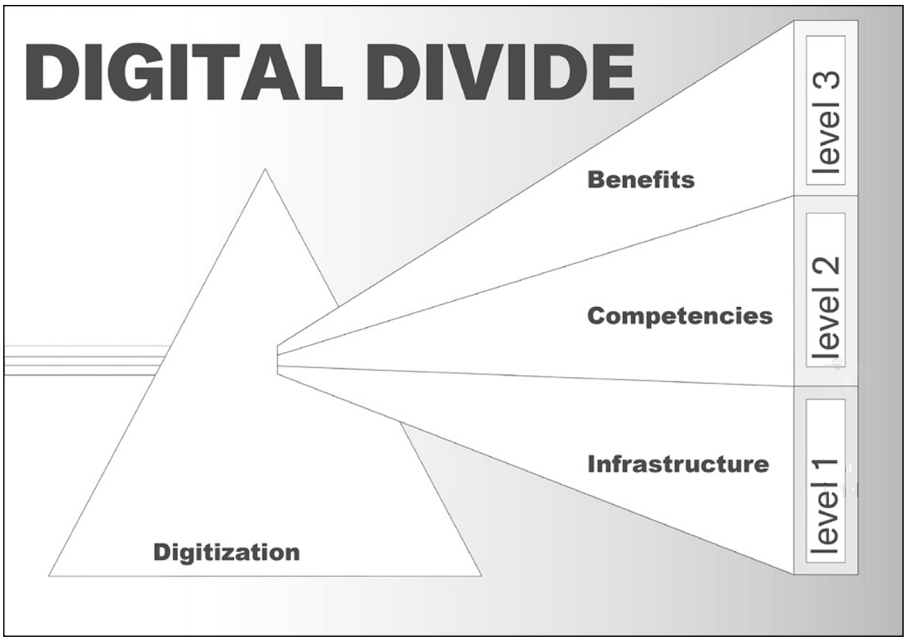

Fig. 1

Hence, what has happened in the last decades, where one of the big societal promises was the chance for social mobility? In the 1980s, it was symbolized by the concept of the social elevator (Beck 1986, 120–60) that described the potential for every individual to profit from social uplift. Through education and social welfare, everybody could climb up the social ladder, so goes the basic idea. But the barriers for a social uplift through education are getting higher. The OECD study

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"A broken Social Elevator?" (OECD 2018) recently showed how persistent and multifactored the structures of inequality are today and how they are passed on to the next generation over the years. The authors described with the image of "sticky floors" that families and communities in many parts of the world are trapped at the bottom of the social ladder with poor chances for any social mobility, while at the top of that ladder the "sticky ceilings" seem to guarantee wealth and personal benefits throughout the decades.

When we zoom into structures of the digital divide, we also find these "sticky floors" and "sticky ceilings." A recent study on Germany's "digital index" showed that people with a higher education background are becoming digital pioneers (44% of the population) that benefit the most from digitalization, whereas people with minor formal education are falling more and more behind (18% of the population) (Initiative D21 2019/2020). We find one of the reasons for that in the lack of digital competences. The recent ICILS study analyzed computational skills and competences amongst school children in 12 European countries. Although some progress had been made in the last years to provide digital education in most of the countries, still 25% of students were demonstrating only functional working knowledge of computers as tools (Fraillon, Ainley, Schulz, Duckworth and Friedman 2019). This is a poor result for highly developed countries in Europe. Another reason lies on the infrastructure level, supposed to provide equal access. This is an even more fundamental challenge at global scale. While in the industrial nations the availability of (high speed) internet access (OECD) is growing year by year, allowing more and more people to get online everywhere, we see a different picture in the global south. The paradox of digital inequality (Gillwald 2017) shows us that although more and more citizens of African states are coming online, still the inequality grows and grows. In the last decade, there were high hopes for initiatives such as AISI (Africa Information Society Initiative) or OLPC (One Laptop Per Child), but they were ill adapted to the African environment. While OLPC laptops were expensive to build, limited in number and required electricity – something that wasn't possible in many schools at that time, AISI failed to deliver on its promise to connect villages with a global information network for similar reasons (Kubickova 2019). Today, mobile phones are seen as the best opportunity to get citizens online at large scale. In Sub-Saharan Africa, the mobile phone penetration rate is

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forecasted to reach 50% of the population by 2023. South Africa has the highest mobile phone penetration rate (84%) of the continent. But still, digital exclusion is significant. It is based on the patterns of social inequality in general, like low income, unemployment, poor education and social isolation. Airtime and data volume for mobile phones is so expensive that it is used in many African countries as a currency and exchanged informally between peers. In South Africa, costs are so high that they exclude Township communities from usage. The dream of economic growth for all based on mobile phone access did not come true – as Ramesh Srinivasan (2013) shows when he criticizes a growing digital divide on global scale in his book *Who's Global Village*.

These examples highlight just a few aspects of the diverse landscape of digital inequality on a global level, by showing us the interdependencies between infrastructure, competencies and opportunities to create benefits for the population at large. We must come up with political concepts to address these challenges in order to avoid even more divergence of the social classes caused by the digital transformation of our societies. What are our guiding principles for future policy making, and what are our basic values to build upon? How do we get to a more sovereign approach to digitization?

Digital sovereignty

In the aftermath of Edward Snowden's global surveillance disclosure, more and attention has been given to the discourse on digital sovereignty. The term is referred to from different perspectives: from debates on the national and state sovereignty concerning the technical infrastructure, and therefore global network dependencies (Pohle and Thiel 2019 ; see also Friederichsen and Bisa 2016) to the individual level of basic skills and abilities to participate in a digital society while shielding one's own privacy. I will show that the individual level of digital sovereignty can play a major role in the discourse on how to bridge the gap of digital divide. Therefore, I will focus more on the individual level of sovereignty and highlight the ramifications of practicing digital sovereignty in everyday life. I will address the questions: What are the parameters to allow or hinder it? How does the concept address the above-mentioned challenges? And how is this concept reflected in examples of current digital policy making on the national level?

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In this context, digital sovereignty[2] refers to whether citizens are "empowered and autonomous to act in various roles in the digital world" (Joost, Micklitz, Reisch et al. 2017, 3) – be it as participants on markets, in social networks or in policy-making processes, as prosumers within networks, or as citizens in a digitally embedded society. These roles contain the rights and obligations of citizens to participate and, therefore, to act in an independent, proficient and responsible manner in the digital realm. It refers to the "concrete development of a human personality in terms of being able to implement one's own strategies and decisions, where this involves a conscious use of digital media or is (co-)dependent upon the existence or functionality of digital media" (Mertz, Schlomann, Manderscheid, Rietz and Woopen 2016). "Digital society" (Katzenbach and Bächle 2019), a term which recently became popular but remains also quite vague, points out the changing landscape of the digital transformation which affects so many aspects of our everyday life. Against this fundamental transformation, we need to define the civic principle of sovereignty anew.

Building on this concept, the broad scope of it becomes obvious. If citizens are not enabled to act independently and in a responsible manner in these various roles of the digital society, basic civic rights are at risk of violation. Therefore, in a group of experts, we defined guiding principles for practicing digital sovereignty: *freedom of choice, self-determination, self-control and security*.[3] The first principle, freedom of choice, means that individuals should be at liberty to decide on their own whether to do or not to do something, e.g., to become an active manager of their personal data online and decide independently about whether to disclose, transfer, delete, trade or donate their data (data sovereignty) (Palmetshofer, Semsrott and Alberts 2016). The second principle, self-determination, is linked to the German right for "informational self-determination" (*"informationelle Selbstbestimmung"*) and refers to individual's ability to retain control over important decisions. This could lead to the

2 I first presented this concept in a report for the Federal Ministry of Justice and Consumer Protection in Germany in 2017 (Joost, Micklitz, Reisch et al. 2017).

3 See: Sachverständigenrat für Verbraucherfragen 2017. In this article, the principles were developed with focus on online consumers; here, I am transferring the principles to a more general setting of citizens online.

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guideline that individuals should not be subject to an AI-based decision-making algorithm in cases where these decisions might have a significant impact on their personal lives (Sachverständigenrat für Verbraucherfragen 2017, 4), be it related to medical indications, a financial situation or a profiling based on race or gender. The third principle, self-control, addresses the challenge of individuals spending unlimited amounts of time online – or even suffering addiction to certain online activities. Self-control as a guiding principle therefore means that users are able to set their own limits and be aware of the consequences of their behavior online. The last principle, security, focuses on personal data, communication and infrastructure that needs to be protected against cyber-attacks, fraud or theft of data. Different measures need to be in place to protect users online, and they have to be initiated by the state, by corporations and service providers as well as by the users themselves. In this context, privacy-by-design and privacy-by-default standards play an important role for its practical implementation.

Fig. 2

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As shown in figure 2, the potential of practicing digital sovereignty as such is framed by three basic constituents, namely *digital literacy*, *regulation* and *technologies* (Sachverständigenrat für Verbraucherfragen 2017, 5ff.). These define the scope and show their impact on the individual as well as collective potential for practicing digital sovereignty.

First, digital literacy[4] describes a set of skills needed to interact with digital media, deal with information online or manage one's own data, etc. It mirrors the second level of the digital divide with its focus on competences. Second, technology is used as an umbrella term to describe specific enablers or disablers of sovereign behavior online, e.g., security measures, transparent data management or user-centered design. It is linked to the first level of digital divide with respect to the infrastructure itself. Third, regulation refers to corporations offering the services online as well as government entities forming regulatory frameworks.

The model proposes that digital sovereignty emerges from balancing these three constituent parts. Their interdependencies are a fundamental challenge to any opportunities for practicing digital sovereignty on an individual as well as collective layer. Let us take the example of a responsible data management, where citizens should be able to disclose, share, delete, donate or sell their personal data online. This visionary approach has been formulated by some data activists and NGO stakeholders and promoted throughout the EU for some years already.[5] On the level of digital literacy, basic data management skills and data literacy would be needed in order to know about the value of one's personal data, the potential consequences of selling or sharing this data, as well as the potential drawbacks that one might face when not sharing data (e.g., in social networks). On the regulatory level, we see in the GDPR legislation the right to data portability (Art. 20) that should enable anybody to transfer one's freely data from one platform to the other. In principle, one could argue, if a citizen has the skills necessary to manage their data successfully and if they are entitled by European legislation to transfer data, there would be a future pathway for data sovereignty online. But in fact, this

4 See the European Digital Competence Framework (European Commission 2019); see also Buckingham 2015.

5 See e.g., MyData Global, https://mydata.org/.

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is not true. The technology that is put in place by corporations like Facebook do not allow sufficient data transfer or demonstrate transparent management, as the data activist Max Schrems has shown several times in the last years, most recently denouncing 101 European companies for illegal transfer of (personal) data to the US.[6]

With this example, we see how the concept is reflected in current digital policy making. It shows us that the conceptual framework of digital sovereignty always needs to consider the trajectories between individual skills, regulatory power and the actual technology put in place. Many digital policies are struggling due to these interdependencies, like the German Network Enforcement Act ("*Netzwerkdurchsetzungsgesetz*") created in order to fight fake news and hate speech on social media platforms. Putting this regulation into practice was quite challenging as the detection of illegal content on platforms like YouTube, Twitter or Facebook required automated detection processes like filtering the uploaded content ("Uploadfilter") (IVD 2019). This was widely criticized as building up an infrastructure of censorship and violating the freedom of expression (Kurz 2017). At the same time, the efficiency and effectiveness of this regulation is not (yet) obvious as first evaluations show (Bitkom 2019). *Digital literacy* capacities to cope with fake news and illegal content online need to be build up accordingly, as well as automated procedures like image and text analysis to detect hate speech online (*technology*). Furthermore, the social implications of this legislation have to be taken into account, too, in order to understand the social dynamics of discrimination based on hate speech, cyber bullying, fake news and other illegal content. Evaluating the regulation meant to tackle the digital divide is important in order to understand the long-term consequences. Therefore, I would propose taking the framework of digital sovereignty as a metric for digital policy making in order to address the intersection of *technology*, *digital literacy* and *regulation* accordingly.

Outlook

So far, I have analyzed the patterns of the digital divide as one of the reasons why the social fabric is fraying in many parts of the world.

6 NOYB – Europäisches Zentrum für digitale Rechte (European Centre for Digital Rights), https://noyb.eu/de.

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Furthermore, I have proposed the concept of digital sovereignty as a guiding principle for future digital policy making. Now, we can reflect on some of the consequences we might draw from the discussion. First and foremost, understanding the digital divide on a global level, with its inherent structures of inequality and its severe social implications, is one of the most important challenges that need to be addressed on different policy levels. If we analyze the underlying paradigm in digital agenda setting in many cases, we still see tech-optimism and the Californian Ideology making the rules. Shifting the focus to the social implications and setting the aim of a more equal and inclusive digital society at global scale, we will have to act responsibly and define some of the debates anew.

Therefore, we need to address all three different levels of the digital divide in agenda setting processes. Starting on the first level with a basic right for access, we have to see it as a fundamental part of the basic services for the public (as part of the *"Daseinsvorsorge"*) as proposed in the IGF "Internet Rights and Principles" agenda (IGF 2011). With regards to the second level, strengthening digital literacy at scale is of crucial importance. Providing access to education and resources cannot only be granted for privileged groups of people. Leveraging open source hardware and software as well as open educational resources are helpful to provide affordable access to resources, too. But on a more general level, we have to acknowledge the crucial role that digital literacy plays in allowing citizens to participate in a digital society. Therefore, we need to double down on our efforts to provide these skills in formal education as well as in informal settings – for every age and background. The slow rise in competencies in Europe, as stated in the ICILS study, should be a warning signal for policy makers that we are widening the digital gap for the years to come if we don't speed up with new concepts of digital education and learn from best practices.

Addressing the third level of the digital divide, the personal and community-oriented benefits, is a social aspect that needs to be considered in the digital agenda setting, too. Understanding individual needs and barriers as well as collective motivations must be taken into account because they are part of the reasons for a successful digital practice in everyday life settings. In order to understand the factual basis and development, we also need to focus our research on these social aspects of the digital society.

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With the European vision for an "open, democratic and sustainable society" as proposed by the current digital agenda (European Commission 2019/20), we are heading in the right direction. The European policy frameworks are cycling around the notion of European (and humanistic) values against the backdrop of the violation of human rights facilitated by information and communication technologies, as we see it in China with the social scoring system as well as in other global efforts to undermine anonymity, boost censorship and expand surveillance. Data protection, cybersecurity and ethically designed artificial intelligence (AI) (Madiega 2020) are therefore in focus, as well as the current EU data strategy to provide better access to high quality data sets for businesses and public. If we would bring a more holistic view on the societal implications, patterns of inequality and the concept of digital sovereignty to the table, we might gain a better framework for the political decisions yet to come.

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Digital Capitalism's Crises of Sovereignty

Philipp Staab

Since the 1990s, the internet has been described as a place that generates systematic challenges to sovereignty in modern societies. In these debates the central point of reference used to be the challenges of enforcing state sovereignty on the web, in particular, the question of whether national law can be enforced in the online world. "Code is Law" is the key formula that Lawrence Lessig coined to describe the deficient enforcement of traditional rule of law in "cyberspace" (Lessig 1999). According to his classical dictum, the rules and procedures of nationally constituted political entities – ideally the representation of the will of the people – do not apply on the internet. Instead, system architectures and their constructors govern it.

In the course of its development, the debate around the (non-) enforcement of law on the internet has taken several turns and has been occupied by different actors. The first references to the concept of sovereignty were still buoyed by euphoria about possible new forms of autonomous self-government in a lawless space. John Perry Barlow's *Declaration of the Independence of Cyberspace* from 1996 is probably the most striking example of the initially positive association with the internet's distance from the traditional constitutional state.

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A counter-position then coalesced around dealing with the dark sides of this legal vacuum: Spam, malware, "revenge porn," "trolling" and other phenomena were described as problematic aspects of a digital sphere beyond the jurisdiction of the state (Johnson, Crawford and Palfrey 2004; Froomkin 2015). Finally, a third position emerged in the wake of Edward Snowden's revelations: The enormous scope of state surveillance in the digital sphere made the internet of the 2000s appear to be a place of national and especially US American hyper-sovereignty, which in turn implied the loss of sovereignty of other state bodies – just remember the surveillance of the German chancellor's communications by US security authorities.

Succeeding as well as in distinction to the outlined positions, I would like to elaborate the following argument in this essay: Specific developments on the internet of the 2000s require a more complex understanding of sovereignty in the digital age. It is not sufficient to conceive of sovereignty as a purely political capacity for self-government and self-determination carried out by the nation-state. Instead only a systematic analysis of the connection between the radical commercialization and oligopolistic domination of the internet (Staab 2019) as well as its political control (Deibert et al. 2008; 2010) can reveal the extent of the sovereignty crises in digital capitalism. To elaborate this claim, I will at first briefly describe some key elements and events in the recent history of the capitalist development of the internet. Then I will look at the specific production model of the leading companies of the commercial internet that have matured in this context and outline some of its most important socio-economic effects. These descriptions lead me to the diagnosis of three sovereignty crises systematically linked to the expansion of digital capitalism. In a concluding point, I outline elements of a possible reaction to this constellation of crises in the European context. The analytical framework for my remarks is the concept of digital capitalism originally developed by Dan Schiller (2000; 2014) and recently updated by myself and others (Staab 2016; 2019; Staab and Nachtwey 2016; Nachtwey and Staab 2017).

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The legacy of the crash

Digital capitalism isn't just an evocative metaphor for the growth of digital technologies in numerous areas of work, life and the economy – in other words, to denote a process that has been advancing consistently since at least the late 1970s in the highly developed economies of the OECD world (Schiller 2014). From an analytical perspective, it only makes sense to speak of digital capitalism in association with a new quality of both economic activity and social integration of citizens. This new quality developed after the dotcom crash of 2000 in the course of the digital economy's reorientation, which is due not only to the immense worldwide expansion of the digital infrastructure but also to the emergence of power structures in the commercial internet (Srnicek 2016). As a result of these two developments, new threats to sovereignty in and of digitalized communities have emerged that go far beyond the original sovereignty problem of the internet's inadequate state regulation.

The boom in digital technologies in the 1990s was (as it is today) driven by large amounts of venture capital. After the dotcom bubble burst, it became increasingly evident that many of the companies hyped in the 1990s didn't actually have any viable business model. Eventually, the collapse worked as a form of market cleansing that only companies with an "economically sound model" were able to survive. One must not forget that even Google was in serious danger of bankruptcy at the turn of the millennium. It was the invention and the rapid expansion of the market for online advertising after 2000 – to this day the only truly profitable business model on the commercial internet, besides the comparatively new cloud computing – that prevented this.

The market cleansing caused by the crash also paved the way for the domination of the World Wide Web by the monopolies and oligopolies of what today is often referred to as Big Tech or the Big Five: Google, Amazon, Facebook, Apple and Microsoft. These companies, all of which are now in the top 10 most valuable companies in the world (at times they even occupied the top five places), are the gatekeepers of the commercial internet. They provide the hardware and operating systems, own the marketplaces of the digital economy and, as cloud computing gains in importance, increasingly control the crucial infrastructure elements of the internet (Staab 2019). As

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digital capitalism's leading companies (Dolata 2015), they form the blueprints that the technological transformation of other industries and enterprises is based on (Nachtwey and Staab 2017).

Consumption, not productivity

From a political economy perspective, this role model status is quite astonishing. Usually, the implementation of new technologies in the economy is perceived of as an instrument to increase company productivity. To this day, however, it is highly controversial whether the introduction of digital technologies in the world of work since the 1970s has made any significant contribution to economic growth at all (Gordon 2016). The productivity paradox concisely formulated by Robert Solow in the 1980s – "You can see the computer age everywhere but in the productivity statistics" (Solow 1987) – has still not been replaced by the new growth constellation longed for by advocates of digitalization (Brynjolfsson and McAfee 2014).

The growth of the leading companies of the commercial internet does not derive from productivity gains they initiate. It is, instead, based on their implicit promise to generate surplus profits in the area of consumption (Staab 2016): Online advertising (Google, Facebook, Amazon), e-commerce (Amazon), new distribution channels (platforms, app stores) – the so far all-dominant sources of profit for the leading companies – are entirely driven by the expectation of bringing about consumption that would not be realized under different conditions.

Online advertising promises a detail-rich *individualization* of consumption offers, which is supposed to make customers ask for products that they would otherwise not have noticed, let alone bought. In addition, the data collected during advertising, the act of buying and, in general, almost every interaction on the internet is used to set in motion a process of *recursivity* that is intended to create customer loyalty: Suppliers and potential customers remain in constant contact, usually unawares, which is supposed to enable companies to capitalize on new user preferences immediately and directly. Furthermore, digital technologies enable an enormous *acceleration* of consumption processes: In the subway, on the toilet, during lunch breaks – with a smartphone the world of goods is always just a few clicks away. Digital capitalism's service proletariat delivers the purchases right away.

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Thus, in analytical terms, it is not so much efficiency gains in the production sector that have been at the core of digital capitalism till this day. It is characterized instead by the radical combination of technological innovations with strategies for rationalizing the consumption apparatus of contemporary societies (Staab 2016).

Privatized Keynesianism 2.0

In this respect, digital capitalism stands in a tradition of a post-Keynesian demand policy, which Colin Crouch has described as "privatized Keynesianism" (2009). Since the 1980s, consumer debt has systematically expanded in order to maintain demand. This debt helped replace purchasing power that was lost due to wage stagnation. Digital capitalisms' privatized Keynesianism 2.0 has not yet copied this direct way of generating demand. Rather, it is based on the subsidization of consumption by venture capital (e.g., trips with Uber are subsidized by the company), on profits made elsewhere (e.g., advertising revenues finance Google's free services) and on the cannibalization of 'analogue' competitors (i.e., the margins of e-commerce dry up the profits of bricks-and-mortar retailers). Nevertheless, the subsidization of demand pursued as part of Silicon Valley-style growth-before-profits strategies, ultimately aims at a maximization of private consumption – just like the credit-driven model.

From a macroeconomic point of view, the strategies mentioned could only be considered engines of economic growth if they actually tapped into otherwise untouched reservoirs of demand – in other words, if money is spent that would not enter the commodity cycle under different circumstances (Staab 2016). Private savings or assets could be worthy of consideration in aiming for this economic development.[1] However, unlike income, which usually flows back into the economic cycle, high levels of wealth are usually removed from the commodity cycle (Kumhof and Rancière 2010; Kumhof, Rancière and Winant 2013) and the strategies of Big Tech do not suggest anything is going to change in this respect.

Quite the contrary, the vast amounts of capital reserves that the leading companies themselves hoard and thus withdraw from the economic cycle are striking. In spite of financial pressure caused by

1 Due to restricted space, the large and important field of public demand, which is admittedly of great relevance in the present context, is not included here.

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the COVID-19 pandemic, Apple alone is still credited with reserves of 193 billion US dollars. If one makes this connection, the leading companies certainly appear to be part of the problem that their strategies for rationalizing consumption are purported to solve.

In times of wage stagnation or even real wage losses, which of course have a negative impact on private demand, rationalizing consumption resembles fishing in overfished waters. Big Tech may be able to claim growing shares of the fishing industry for themselves through the incredibly detailed measurement of fish populations and the use of electrical nets. However, they make no significant contribution to the reproduction of fish stocks. What one fisherman gains, the others therefore lose. These strategies do not represent a growth model for society as a whole.

At the same time, growing numbers of venture capital (in the case of unlisted companies) and excess reserves (in the case of Big Tech) encourage expansion into new markets. The smart home market, i.e., the connection of private living spaces with the consumption networks of the commercial internet, follows the established pattern of rationalizing consumption. Amazon Echo or Google Home bring potential consumers even closer to the digital department store. If the smartphone is too far away or if both hands are occupied elsewhere, you can still shout your wishes at a networked microphone. As usual, user data on lifestyle and, above all, consumption preferences are collected and serve as a valuable resource for targeted advertising, which in turn is fed back directly to potential customers via the devices.

On the other hand, the movement into industrial core sectors such as the automotive industry at first glance seems to open up new markets. So far, however, it is by no means clear whether this expansion is really intended to move away from established patterns of intensifying consumption opportunities. It has not been announced that Big Tech want to build cars themselves. Their aim might instead be to act as platforms for the networked car of the present and future on the software side. Paired with autonomous driving, this would simply mean an extension of the platform companies' access to the lifetime of users: If you have to keep your hands on the steering wheel, the consumer networks of the commercial internet cannot reach you. If the car drives by itself, time is freed up for activities such as online shopping or music and video streaming, which can then be handled

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by the exclusive ecosystem of the respective company. If this assessment is correct, all the hype about new business models ultimately conceals the old pattern – and the old problem that private demand does not fall from the sky.

Against this background, Big Tech's plans for "smart cities," "smart infrastructures" or "smart health," which are often touted as measures of altruistic world-improvement, are easily understandable. They conceal a two-part strategy: Firstly, the public sector is moving into the focus of giant internet companies. It entails the promise of capitalizing fields that are still partly removed from the market (e.g., private homes, which have recently found their way into the market via portals such as Airbnb) as well as stable demand via public contracts (e.g., in the health and education sectors). The well-known neoliberal privatization program is being relaunched. In a second step, all the basic strategies of the commercial internet can be applied to these new fields – from data mining, third-party financing (e.g., running advertisements during the red phase of the traffic light) to individual "pricing" for infrastructure services (e.g., the price of privatized public transport can be adjusted to then increasingly transparent individual customers' willingness to pay – as is already the case with Uber rides or Amazon products).

Sovereignty in digital societies

The outlined transformations of markets and industries, but also of cities and the public sector, alter mechanisms of social integration and represent attacks on sovereignty in digital societies in three ways.

Consumer sovereignty

Firstly, the opportunities for citizens' self-determination as market players are already systematically undermined at present: The market power of the leading commercial internet companies perverts market processes, because gatekeeper platforms control who is given access to digital markets, dictate conditions and, in terms of visibility, can systematically give preference to their own offers. At the same time, the transparent consumer is at the mercy of fully automated, market-distorting processes such as personalized pricing algorithms. It is only at the cost of integration into the consumer networks of the leading companies that one obtains access to basic internet infrastructure services: Without Android or iOS, for example, it is difficult

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to use any mobile internet services. With the purchase of a smartphone, people automatically become part of the economic ecosystems of the internet giants.

Civic sovereignty

Secondly, as we have known at the latest since the Snowden revelations in 2013 and more recently through the debates on "hate speech" and advertising-financed fake news in the US election of 2016, these developments by no means leave the sovereignty of citizens as political agents unaffected. Presumably, the second most important use for the huge amounts of data accumulated by the leading commercial internet companies after the intensification of consumption is for espionage, influencing and controlling public opinion as well as targeted disinformation in the service of state and economic actors. On the one hand, the sovereignty of nation states comes under attack when they cannot protect their citizens' (or domestic companies') data from access by foreign agencies, or when foreign "hackers" destabilize public debate. On the other hand, the sovereignty of citizens *vis-à-vis* their own state is increasingly at risk – if the latter, through surveillance, hacking or cooperation with key companies, appropriates a historically unprecedented amount of their personal data – whereas it should actually guarantee their citizens' liberal rights.

Economic sovereignty

Thirdly, economic sovereignty, which forms an important basis of self-governing communities, is in many respects subject to considerable transformation. The most obvious example of this is the tax avoidance policy of numerous leading digital companies.

However, no less important and politically far more sensitive are questions of changing patterns of accumulation. If the commercial internet, in which the decisive gatekeepers and market owners reap their monopoly profits, was indeed to act as a blueprint for the restructuring of numerous other business areas, then the established mechanisms of appropriation – and distribution! – of economic profits would be called into question. Imagine an automotive industry that really is attached to the ecosystems of the leading companies. Following the platform logic, large parts of the profit margins would fall to the dominant software companies and thus be removed from both the systems of collective bargaining and public taxation.

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In addition, there are all those direct and indirect effects on the system of industrial relations, forms of employment ("crowdwork") as well as power and control in the workplace, which can shake the foundations of entire economic sectors.

European-style digital capitalism?

When asking about a European answer to this three-pronged sovereignty crisis, one can observe the coupling of various aspects which could help tame digital capitalism. For example, approaches to an unagitated and hitherto uncoordinated, but potentially very effective *digital regulatory policy* can be observed at various levels in Europe today. "From below," numerous European cities have significantly restricted the scope of action of companies whose goal is the commercialization of urban space. The most popular examples are the multi-billion-dollar start-ups Uber and Airbnb, which have systematically been restricted, initially by local and subsequently by national legislation. In some cases, the regulation has harmed their business models to such an extent that the profits from wage dumping and the commercialization of public or private space no longer appears worthwhile. "From above," the European judiciary has initiated various lawsuits against companies such as Google and Apple, one focus is tax evasion, which could shore states up against the loss of economic sovereignty with regard to global corporations. In the field of the digital public sphere, first attempts to establish a democratic culture of debate on the internet can be observed. Germany, for example, subjects the actions of a corporation like Facebook to the public interest. Take the case of the controversially discussed Network Enforcement Act of 2017, which holds Facebook at least rudimentarily responsible for rights violations on its platform. Economically significant might be attempts to use and update antitrust law to address the problem of digital monopoly power and to create a "level playing field" (Zysman and Kenney 2017) in the commercial internet, which could set tighter limits on monopoly profits.

However, in order to really tackle digital capitalisms' sovereignty crises, one might have to gain greater distance from the market-driven regulation playbook. Consequently, questions of digital infrastructure ownership (which are particularly significant in the field of cloud computing) or the topic of the *internet as a public* good are being increasingly politicized again, with congruent interests emerging

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between citizens, states and companies in Europe. This is a politically extremely sensitive area of sovereignty policy, the successful configuration of which cannot be guaranteed without a combination of legislative taming of the leading companies, on the one hand, and investment in a digital infrastructure for citizens, states and companies (at least partially) organized in the public interest, on the other.

The central point of reference for a digital capitalism with European characteristics is, politically, already well established: data protection. Data protection is widely misjudged as a variable of economic development: Commercial internet lobbyists never tire of emphasizing the absolute necessity of unrestricted access to ever more data, as this is supposed to be the only way to achieve technological developments regarding the buzzword of artificial intelligence – currently the big favorite of venture capitalists. But what is left for Europe to gain here? No digital Marshall Plan, no matter how much money it provides, will be able create competition for Google and Apple – at least not without breaking the political taboo of open markets in the style of the Chinese firewall.

However, the operating range of the leading companies certainly can be restricted in the interest of sovereign communities. This would favor European companies. Even today, the best sales pitch for medium-sized business-software firms in Germany is that they host data under the jurisdiction of German data protection law. For these companies, tightening data protection laws further would in no way be detrimental. On the contrary, if properly designed, they can help citizens and companies benefit from locational advantages and possibly even make the European data architecture an export hit in the future. At the same time, with the help of an entrepreneurial state (Mazzucato 2014), the chance exists to enter future markets not yet dominated by leading American companies: In the industrial internet of things that is yet to be built, hardly anything is more important than guaranteeing a functioning data protection system. Smart data protection could thus form the basis of a genuinely European digital production model: A digital infrastructure based on security guarantees and a European data policy that works to preserve economic, civil and market sovereignty.

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Agency for All, Privacy for None

Claudio Guarnieri

In the approximately 20 years I have now spent online, the internet has changed rapidly and rather unpredictably. In the early 2000s, as a teenager, I ventured my first steps on the now ancient dial-up internet. I'd connect my 56K modem, hear the magical tones while dialing my ISP telephone number, and suddenly open new gates to exploration. Perhaps attracted by its aesthetics, I gravitated towards a world of hacking which was then far from today's multi-billion-dollar cybersecurity industry. Learning about hacking led me to discover Linux and the free software movement.

At the time, the speed of my dial-up line was so slow and horribly costly. Every minute of navigation costed as much as a minute-long local area phone call. Downloading the installers for a Linux distribution was not possible. Installation discs were traded in person typically at events by Linux User Groups (LUG) and local user collectives, which at the time were numerous throughout Italy, my home country. Alternatively, you could send money to the developers of your favorite distribution, who would then ship branded floppy disks or CD-ROMs back to you, typically from the United States. However, few of us could afford it and those discs became sought-after collectibles.

Back then, Linux distributions were rough around the edges, to say the least. Obtaining, compiling, installing and using any software was a challenge. But the struggle to get the computer to run was

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also exhilarating and empowering. Figuring out how to get my US Robotics 56K dial-up modem to work on my Slackware Linux2 (Wikipedia 2021) felt like a remarkable achievement. Ultimately, I could celebrate my successes, and seek help with my failures, on the message boards and online chatrooms.

The difficulty to access this technology and its steep learning curve, coupled with the scarce documentation online, inevitably brought people together to learn from each other. The rebellious act of non-conforming to the computing hegemony of Microsoft Windows became a binding force which gave strength to the growing free software movement. My teenage self was definitely not conscious of this, as I perhaps saw the free software community more as a place of aggregation and acceptance, but I too was practicing some rudimentary form of technological sovereignty. In a time when Microsoft's then CEO, Steven Ballmer, called Linux "a cancer" (Greene 2018), proprietary software was oppressive, Microsoft was evil, and free software was liberating. Music to the ears of a teenage computer geek thirsty for some juvenile rebellion. Soon enough nicknames from the chatrooms became my friends. Together we would crash technology fairs to drop Linux stickers and installation disks at the Microsoft booth. Some early days goliardic digital activism.

There and then, reclaiming agency over our personal computers and rejecting the status quo with the software we used were the baby steps in an ongoing practice of technological sovereignty, which I exercise to this day. However, the evolving nature of technology is reflected in the generational mutations of the struggle for its sovereignty. And in 2020 technology looks very different than in the year 2000.

The Microsoft empire built with the hefty licenses for Windows and Office nearly capitulated to the impetus of the "Cloud" brought by Google and Facebook, and later the whole constellation of Silicon Valley companies. Today, software is no longer the product: all our computing needs are met with an online service provided to us for free (as in "gratis"). The technology industry mutated in an Orwellian offspring of the advertising industry, where free online services are the hook, we are the product, and our data is the commodity of trade.

In 2020, we consume everything through a browser; so much so that Google realized that if a browser is all we need, they might as well

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create an operating system[1] around their flagship browser, Chrome, and produce lightweight and cheap laptops, Chromebooks, with the original single purpose of just navigating the Web. Chromebooks are now very popular in schools (Gebhart 2018), and young users grow up within the gates of a digital amusement park run by the corporate giant from Mountain View. Google wants you to spend as much time in it as possible: use Android phones or a Chromebook computer, use Chrome as your browser, use your Google Account to access Google Search, Google Mail, Google Drive, Google Maps and YouTube. They even tried with Google+ and Google Orkut before realizing they are just not good at social networks. The more Google attractions available, the more you'll stick around the amusement park, the more data you will generate for harvest.

Although Google managed to turn its brand into a synonym verb for "search on the internet," Facebook has, even more ambitiously, aimed to become synonym with "internet" itself. Through an initiative aptly named "internet.org," Facebook provides free-of-charge access to its social network and a few other selected websites in underserved regions of the world by partnering with telecommunications providers and researching technologies "including high-altitude long-endurance planes, satellites and lasers" (Internet.org 2020). And while many critics have called it out as digital colonialism (Shearlaw 2016) and an affront to net neutrality, for tens of millions of people Facebook is the internet.

Silicon Valley is a mining quarry in disguise. Our data is the raw material of a new extractivist trillion-dollar industry, which, instead of selling coal, sells our digital selves. Therefore, our struggle for technological sovereignty has turned more digital and requires us to not only reclaim agency over our electronic devices but to reclaim ownership of our electronic information.

In this era of Surveillance Capitalism, as Shoshana Zuboff (2020) describes it, the idealism and enthusiasm of my teenage free software years are long gone. Because standalone software no longer produces huge profits, Big Tech companies began espousing open source (Schrape 2016). As a matter of fact, before the abusive nature of its advertising-based business model became apparent in recent years (Amnesty International 2020), Google successfully built its

1 Google Chrome OS, https://www.google.com/chromebook/chrome-os/.

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image of a progressive company and attracted talent and users also by becoming a promoter of open source, in stark contrast to the old technological behemoths like Microsoft. However, by appropriating it as corporate culture,[2] Google has helped industrialize open source while alienating its political elements step-by-step, and distilling out the essence of free (as in "freedom") software. Eventually even Microsoft caught up to the change and has become an important promoter of this watered-down open source. Some even see in open source an alternative to the United States' technological trade war with China (Xu 2020).

These days, Big Tech companies release more open source code than ever (Bridgwater 2019), but make no mistake: This is a calculated choice. As we established, data fuels today's tech industry, not software, despite its industrious production. Companies like Google and Facebook eventually realized that by providing open source tools and libraries and free services to the ever growing global population of developers, they can ensure the developers' dependency on their platforms while also extending their data gathering to third-party products and services.

Google funds thousands of open source developers through its yearly Summer of Code,[3] open-sourced Android, releases countless tools and libraries, and has even provided developers free services to facilitate their work. Similarly, Facebook provides open source Software Development Kits (SDKs)[4] for Android, iOS and even Apple TV and PC games, for developers to conveniently allow their users to authenticate over Facebook.

If you are a developer today, you're provided with free access to a technology stack that in the past only big software houses could afford. In return, of course, Big Tech companies expect to harvest data on your users, too. You become part of the scheme, and if you wish, you can get in on it and embed their advertising platforms in your apps and websites so you too can monetize. In other words, open source became a means to further Big Tech's reach into users' data. Ka-ching!

2 Cf. Google Open Source, https://opensource.google.

3 Google Summer of Code, https://summerofcode.withgoogle.com.

4 Google AdMob, https://admob.google.com/home/.

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While free software remains an important framework of values, particularly for new tech-savvy generations, seeking in it answers to the question of technological sovereignty today is outdated, almost vintage. Reclaiming agency over our digital selves requires resisting data extractivism, but its ubiquity and societal dependency make just that very hard. Not only do alternatives typically have a cost, but giving up on certain platforms might also mean giving up on personal and professional opportunities. Twitter became the shop window of your personal brand, Facebook the marketplace of your services, and in the arts and performance sectors Instagram even became a metric of value: the number of followers might dictate the price tags of your artworks or your placement in a festival's schedule.

Because data extractivist platforms became so inescapable, technological sovereignty requires sacrifice: You need to strike a balance between personal freedoms and opportunities. Casting yourself out of these digital amusement parks can turn you into a technological hermit, unseen and worthless in today's attention economy; nearly comparable to the 20th century primitivists who rejected the advent of computers. However, you can determine which platforms are beneficial to your objectives and avoid volunteering an opulence of data to those platforms you don't need: Reduce your data footprint just like you reduce your carbon footprint.

However, our strive to regain control of our data starts with the understanding of where it generates and how it travels. But, the ever-increasing complexity of modern technology complicates this.

The smartphone revolution put pocket computers in the hands of billions of people, and every new generation packs ever more functionality in these palm-sized circuitries. You can call, message, navigate, work, play, record media and do anything the countless number of available apps allow you to do. Smartphones keep pushing the envelope of technological complexity. Their internals are hardly comprehensible to regular consumers, and nevertheless we embraced them as electronic extensions of our biological selves.

Much of my work focuses on exposing the invisible nature of modern technology, and smartphones eventually piqued my interest: How are we to reclaim digital sovereignty while hardly understanding the functioning of the most personal devices we carry? In a work called RADIO ATLAS (Guarnieri 2020b), I attempted to visualize, provide a cartography of the surrounding radio entities, seeking to

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discover what our mobile devices are transmitting unbeknownst to us. Through multiple computers, RADIO ATLAS continuously probes radio frequencies occupied by Wi-Fi, Bluetooth and mobile networks. Turns out, radio frequencies are an extremely crowded space. Our smartphones continuously emit our phones' identifiers over GSM, they advertise their presence over Bluetooth, and look for familiar Wi-Fi names by broadcasting them into the ether. In silence, they constantly transmit data, and allow us to be tracked. Rather unexpectedly, this exploration of smartphones' transmissions and tracking capabilities became ever more timely with the COVID-19 pandemic.

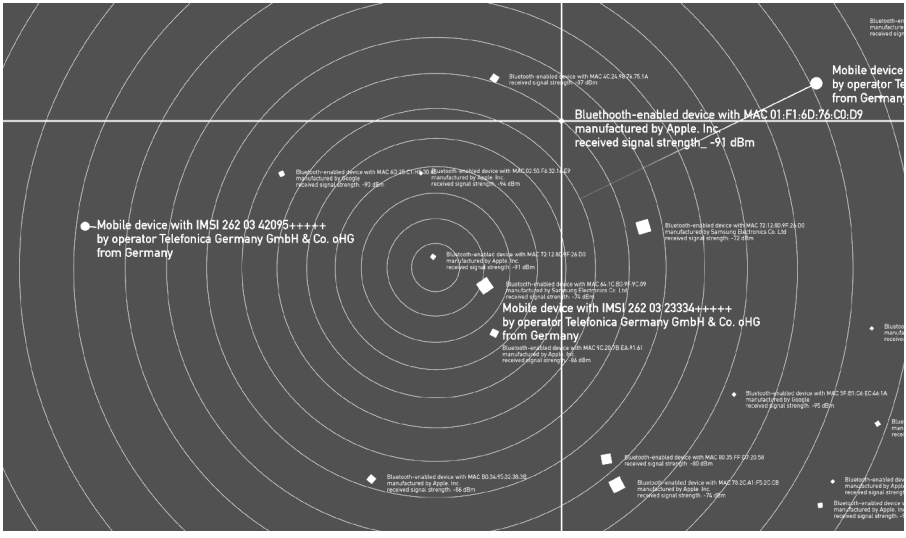

Fig. 1

The eruption of the pandemic propelled the idea of digitized contact tracing (Guarnieri 2020c) to the top of all governments' political agendas. While early on, some proposed tracking everyone's GPS coordinates through their smartphones, national health authorities, particularly in Europe, eventually gravitated towards Bluetooth-based contact tracing and by now many have rolled out apps. Through Bluetooth low energy (BLE) transmissions, smartphones continuously broadcast a computed identifier while keeping records of those received by other devices in the surroundings. Because we all carry our smartphones everywhere and because Bluetooth transmits within a range of a few

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meters, sufficient for approximating a close distance between devices, it all made sense. By attempting to digitize human contact, these apps aim to facilitate the process of identifying potential spread of the virus by reconstructing the social interactions of diagnosed patients.

In an unprecedented collaboration, Apple and Google teamed up to launch a self-titled "Exposure Notification"[5] framework upon which national health authorities could build their COVID-19 contact tracing apps. By combining strong cryptography and the use of BLE beacons, Apple and Google anticipated likely inevitable regulations and made available an architecture more respectful of people's privacy, at least compared to the intrusive alternatives put forward by some governments.

Anticipating the availability of apps built on the Exposure Notification framework, expanding the concept of RADIO ATLAS, I built BLE ATLAS as an attempt to explore BLE by visualizing in real-time beacons received by a sensor I was running. This project was both an experiment as well as a digital artwork. It was an attempt at analyzing Bluetooth surroundings, exposing the unexpected amount of transmissions and scrutinizing inconsistencies in the light of the inevitable surge of use. At the same time, BLE ATLAS (Guarnieri 2020) attempted to subvert the supposed locality of these transmissions, and betray their expected ephemerality by willfully live-streaming them online.

Similarly to RADIO ATLAS, BLE ATLAS quickly highlighted the flood of data transmissions by nearby mobile devices, which even overwhelmed my sensor and forced me to add filters in order to visualize them intelligibly.

The race to deploy contact tracing apps created tensions between governments and Apple and Google. Because of limitations in Android and iOS, the former found themselves cornered by having to embrace the architecture designed by the latter, which enforced strict privacy and security policies, at times contradicting the ambitions of some national health authorities (Hern 2020). Although, admittedly, the Exposure Notification framework safeguards users' data much better than how many governments had planned to, it challenged digital sovereignty as several European officials pushed back (Clarke

5 Google COVID-19 Exposure Notifications, https://www.google.com/covid19/exposurenotifications/.

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2020) on Silicon Valley's supremacy in determining how countries should respond to COVID-19. The fast-paced rollout of Exposure Notification apps fueled a fervent debate on these companies' incentives and interests. And although Apple and Google do not secretly siphon private health data through their framework, contrary to widespread misconceptions spread by poor reporting, their spearheading of this unprecedented social and technological experiment raised the suspicion of many citizens wondering if their own governments have abdicated to Big Tech. The pandemic heightened the clash between global tech monopolies and national governance.

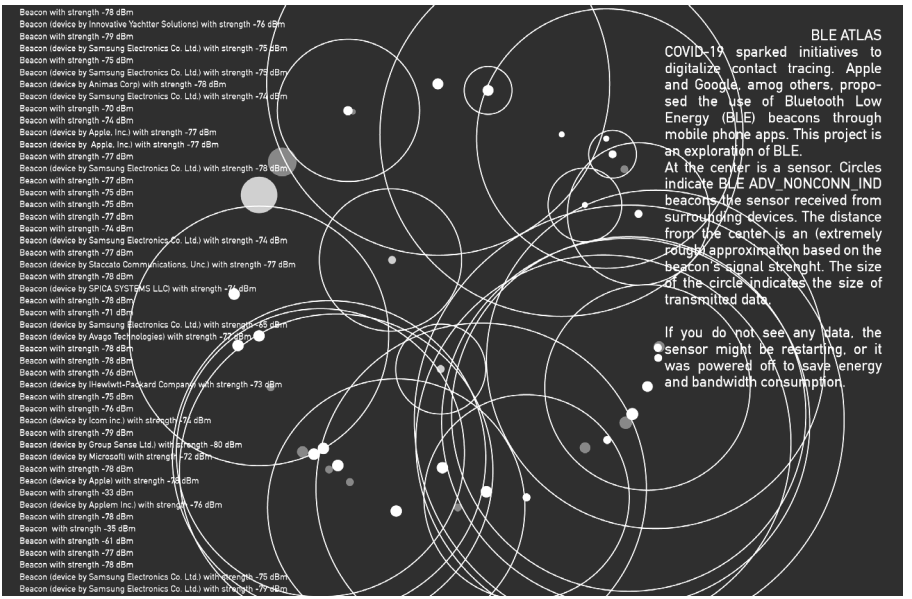

Fig. 2 https://ble-atlas.nex.sx.

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These contradictions can only intensify. Over the last few years, prompted by the disinformation and Cambridge Analytica (Wong 2019) scandals of the 2016 election and by antitrust debates, Facebook and Google executives were grilled during US Senate and Congressional hearings. The footage of billionaire Big Tech executives mumbling and fumbling in front of inquiring committees has become iconic of the second half of 2010s. At the same time, we are coming down from the digital high of the early 2010s, and the veil of wonder around Silicon Valley is coming off – to reveal a dystopian nature. Big Tech continues to govern modern social contracts, but we are starting to grasp the effects of its exploitative business. The 2020s could be the decade of reckoning.

While European Union officials try to reclaim digital sovereignty through regulations and investments, the rest of us are left navigating the conflict between privacy and convenience. The surfacing nature of today's corporate internet and the impenetrable complexity of the technology pervading our daily lives are requiring us to re-think our approach to digitization and rediscover the need for a deep tech literacy. At the crossroads between agency for all and privacy for none, the fight for digital sovereignty rages on. How this fight will play out lies in the hands of the highly digitized new generations who got online through Facebook and Instagram, and who are deeply rooted in this hypersharing world. Those of us who got online with the eerie tones of dial-up modems instead shall be aging observers. Some torn by a maybe cynical worry for a youth seemingly addicted to these platforms, some instead hopeful in a youth much more technologically advanced and showing great strength in other important battles such as gun control, the basic right to education and climate change.

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The State

A Key Actor in Shaping Data Infrastructure Space

Fieke Jansen

The datafication of society has become a significant feature of contemporary social life; emerging from the global uptake of personal computing, internet and mobile communications and cloud services society is now moving into the next phase which is characterized by data-driven decision-making, artificial intelligence (AI), sensors and edge computing. While society is still grappling to understand the social, cultural and political implications connected to these systems, the political imaginaries and economic drivers that are privileging data and technology often go unquestioned. Building on a growing body of research that is dedicated to understanding how technology intersects with governance, this chapter moves away from the notion of the state as being subjected to the dynamics of the data economy and position it as a key actor that actively tries to shape the contemporary relationship between technology and society. As such, this chapter draws on a close reading of the European Commission white paper on artificial intelligence (AI) to argue that for the state data and data infrastructures are seen as essential to sustainable economic growth and societal well-being which drives them to actively mobilizes its regulatory, resource and bureaucratic apparatus to stimulate the development of domestic data infrastructure spaces and a market for European trustworthy AI products.

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Since its early days, the nation-state has enabled and been subjected to larger changes such as the industrial revolution, wars and civil unrest, the emergence of capitalism and in its wake the centrality of the market, privatization of state functions, securitization of politics, and globalization, through each paradigm the role and power of the state has shifted (Scott 1998; Harvey 2017; Dencik et al. 2019). A growing body of research has pointed to the multiple ways in which the "datafication" of society (Mayer-Schoenberger et al. 2013) has caused another significant shift in governance, where it is argued that the interplay between data, governance and the market is changing power relations in society. At the core of this transformation is the belief of states, companies and citizens in data to have the capacity to objectively represent social life and predict human behavior in ways that were inconceivable pre-datafication (van Dijck 2014; Andrejevic et al. 2020). Giving rise to the notion that complimenting or replacing human decision making with data analysis will lead to more efficiency and effectiveness decision-making. Therefore, van Dijck (2014) argues that turn to data is characterized by a deep trust in both the data and in those entities that can process large amounts needed to "predict" human behavior. Some even argue that from this premise emerged a rationale that places data central to the understanding of society, in such a way that it prevents the creation of an alternative political and economic imaginary (Andrejevic 2020; Dencik 2018; McQuillan 2019), suggesting that it is the deeply rooted belief in data that influences the state to privilege data as a key feature of modern statecraft.

As Henman (2010) points out, the turn to data for statecraft is both a means through which state policies are implemented as in itself shaping the political imaginary. He builds on Peter Miller and Nikolas Rose (1990) characterization of governmentality, which "involves both the political rationalities and technologies of government" (Henman 2010, 26), the first encompass the justification for governance and the latter the means through which a state governs. Henman (2010) argues that technologies of governance, in this chapter data that makes people and events legible to the state, are not merely a means for translating political ideologies of the state into action, but that these tools, in turn, shape the political rationalities. Thus, when data-driven decision-making becomes a tool for statecraft, and society and people only become legible through data, an

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argument comes together to shape a number of political realities: it will justify increased government data collection and surveillance (Egbert 2019). It will prioritize governance that is aimed at managing a problem rather than trying to addressing the structural causes of the problem as data analysis privileges correlation over causations (Andrejevic 2014). And it will allow the state to increasingly disclose and connect data within and between governmental institutions to impose new conditionalities on those trying to access to specific government services (Henman 2011). Henman's (2010) argument implies that while data is primarily referred to as a tool of governance it, in turn, shapes the political rationalities and further entrenches the centrality of data within statecraft.

It is important to note that the conceptualization of contemporary governance needs to be understood in relation to capitalism and the political imaginary of how economic growth is increasingly tied to the value of data. An emerging body of research is exploring the relationship between data and capitalism, and while there is much debate about its exact nature, critical political economy scholars generally agree that the political and economic organization of data is transforming and enshrining the distribution of power relations in society. At the core of this new economical paradigm is the idea that data holds value and creates a new form of accumulation that "aims to predict and modify human behavior as a means to produce revenue and market control" (Zuboff 2015, 75). The nature of data, its replicability and transferability at almost no costs, makes it subjected to a different economy "where abundance is the norm rather than scarcity" (Brynjolfsson et al. 2014, 9), as such extracting value from data becomes a question of both having access to it and having the knowledge, skill and resources to analyze it (Andrejevic 2014; Wark 2019). Thus, as Srnicek (2017) argues, the competitive advantage in the data economy stems from the scale of data and computational power one has access to and the ability to dominate the niche one operates in, which has resulted in the rise of large monopolistic technology companies who are primarily based in the United States and China. These developments have both "entrenching a dependency on an economic model that perpetuates the circulation of data accumulation" (Dencik 2020, 1) and centralized control over data that is needed to develop the next-generation technologies. As such, the emergence of the data economy has confronted states with the rise

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of large monopolistic technology companies that operate both inside and outside their domestic jurisdictions and control the means on which this new economic paradigm is based.

The spaces of conflict between domestic and transnational jurisdiction in which companies operate to maintain and gain a competitive advantage is conceptualized by Easterling (2016) as Extrastatecraft. In her historic analysis of free trade zones, broadband networks, oil exploration and spatial products she draws our attention to the establishment of infrastructure spaces in which there are "multiple, overlapping, or nested forms of sovereignty, where domestic and transnational jurisdictions collide, ... a portmanteau describing the often undisclosed activities of, in addition to, and sometimes even in partnership with statecraft" (Easterling 2016, 15). These infrastructure spaces are characterized by the drive of industries to gain access to new markets and new territories to increase capital through extraction and accumulation, and the regulatory exemptions and tax incentives within sovereign territories to attract or support specific industries without public dialogue. Which have often resulted in the creation of new physical or immaterial infrastructure spaces, where "labour and environmental abuse proceed unchecked by political process" (Easterling 2016, 15). Drawing on Easterling, this chapter argues that the turn to the datafication of society, the interwoven relationship between technology and governance and the emergency of a global data economy that operates inside and outside domestic jurisdiction has created data infrastructure spaces that go unchecked by traditional political processes and as such can be considered new sites of Extrastatecraft.

In the conceptualization of Extrastatecraft, the state is not considered weak or insignificant; it is often the initiators, supporters and at times the master of these infrastructure spaces. As I will argue in this chapter, the state has the ability to wield its legislative power, bureaucratic apparatus and institutionalized legal order to defend the interest of the dominant class and forward certain political ideologies (Jessop 2016; Smith et al. 1999). While the rise of the "big tech" companies is often attributed to the Silicon Valley's free-market ideology, the importance of favorable domestic regulatory environment and tax exemptions in the shaping of the data economy should not be dismissed (Meideros 2019). Chander (2014) exposes how legal innovations in the 1990s in the Unites States "reduced liability concerns

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for internet intermediaries, coupled with low privacy protections, created a legal ecosystem that proved fertile ground for the new enterprises" (Chander 2014, 642). These favorable domestic policies were coupled with the global idea of technological exceptionalism, which assumes that there is something so fundamentally different about data that domestic legislation and government control is inapplicable and undesirable (Flyverbom 2016; Kahin et al. 1997). Since then, territories like the European Union have slowly been trying to master the data infrastructure spaces and its impact on fundamental rights and domestic market economy through erecting legal regimes like the General Data Protection Regulation and submitting "big tech" to antitrust investigations. These new historical analyses of the rise of the technology industry foreground a global tension of statecraft where the state as a regulatory body is both a contributor and a subject to the rise of global technology companies.

However, as Gates (2011) and Mazzucato (2011) note, the state is more than a regulatory body and has been instrumental in shaping the data economy beyond regulation. Mazzucato's (2011) notion of the entrepreneurial state describes how major technological advances in contemporary history were allowed to materialize through the structural financial support of the United State government. The Department of Defence (DoD), Defense Advanced Research Projects Agency (DARPA), but also the Department of Energy and the National Science Foundation made significant investments in internet protocols, search algorithms, GPS technology, microprocessors, LCD displays and touch screens through applied research grants, early-stage finance and strategic procurement, without which these technologies might never have emerged. Gates (2011) offers a historic account of the rise of facial recognition, through which she notes how the DoD started investing in research labs working on face identification technologies in the 1960s and once these identification systems matured into a commercial product by the 1990s, companies in search of a market found customers in a range of state institutions and agencies (Gates 2011, 27). As such, the state is both an early-stage investor in surveillance technologies and a primary consumer of these technologies once they become a commercial product. These insights allow us to move away from the notion of the state as a mere consumer or regulator of technology and towards the state as a complex assemblage of institutions, organizations and interactions that are working

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for and position the state as an actor with the power to shape technological advances through its financial investment, policies and regulatory environment across spatio-temporal horizons in pursuit of its objectives.

Below, this chapter builds on these notions of the state as a key actor in shaping of data infrastructure spaces, to go on and argue that in their eyes the data economy has resulted in spaces that enact infrastructural powers that sit beyond or outside traditional political processes, as such it is in their interest to master the next technological paradigm to (re)gain its centralized authority in society. Therefore, I'm particularly interested in exploring how states engage with the emergence of new technologies like AI and wield their power to gain control over data infrastructures that operate between domestic and transnational jurisdiction. The following section explores Europe's approach to AI through a close reading of the European Commission "White Paper on AI – A European approach" (European Commission 2020) and foregrounds how the state directs its political rationale and, in turn, will allocate a variety of state resources to construct a European AI market. Using these developments in Europe, I advance the argument that those states with the ability to wield significant legislative power, mobilize resources and direct the bureaucratic apparatus will do so to stimulate a domestic AI market in order to decrease their dependency on the global commercial entities currently dominating data infrastructure spaces.

The white paper: an approach to construct a European AI market

The European strategy on AI articulates a political imaginary in which economic progress and social well-being have increasingly become dependent on a data economy that is dominated by non-European actors to argue that state interventions need to ensure Europe will reap the benefits of this next phase in digital transformation. Artificial Intelligence emerged as a distinct policy area for the European Union during the Jean Claude Juncker presidency from 2014–2019 (Nikolas et al. 2020) and was handed over to the European Commission new president Ursula von der Leyen in 2019. Her commitment to regulating AI in the first 100 days of her office resulted in intense internal and external lobby efforts to slow down any legislative process (de la Baume et al. 2019). Commissioner Thierry Breton, responsible for

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Internal Market and Services and co-responsible for the conception of the white paper, expressed a reluctance to rush AI regulation and stated in his confirmation hearing in the European Parliament "I am not saying we will have regulation on AI in the first 100 days. I won't be the voice of regulation on AI" (de la Baume et al. 2019). These lobby efforts succeeded at dwindling down the legislative commitment to the development of a European AI strategy, which is presented in the "White Paper on Artificial Intelligence – A European approach to excellence and trust" (European Commission 2020). In it, the Commission sets out Europe's policy objectives to promote the uptake of AI and address the risk associated with it through a regulatory and investment-oriented approach.

President von der Leyen presented the Europe Data Strategy and the white paper on AI on the 15th of February 2020 in an opposite the editorial page (op-ed) on "Shaping Europe's Digital Future" (von der Leyen 2020). It is important to note that she opens her op-ed with the sentence "I am a tech optimist," after which she continues to outline her belief in digital transformation to power the European economy and hopes that it becomes "the norm right across our society: from farming to finance, from culture to construction, from fighting climate change to combatting terrorism." In this first section, she frames technological development and uptake as crucial for both economic progress and social well-being in Europe. After a minimal acknowledgement of the need to safeguard rights, preserve privacy and increase trust in the technologies and those who own them, the op-ed quickly moves on to outline how Europe needs a digital transformation that is "European by design and nature." She closes her op-ed with the statement, "We successfully shaped other industries – from cars to food – and we will now apply the same logic and standards in the new data-agile economy." As I will outline below, President von der Leyen op-ed echos the political rationale put forward in the white paper on AI, in which technological innovation is framed as being a crucial driver for sustainable economic growth and state investments are needed to ensure that Europe will not miss out on the next wave of digital transformation, as such public institutions and services should be both investors in and early adopters of these European made technologies.

A key feature of the white paper is the need to create a European data space that acts as a counter-weight to an otherwise US- and

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China-dominated AI market. In a reflection on the current data economy, the Commission notes that 80% of data analysis happens in centralized cloud infrastructures, a market that is dominated by non-European companies, which limits access to data and computation power for European actors and decreases the states ability to govern and control it. The emergence of new technology like AI and edge computing offer opportunities to level the playing field as "today most data relates to consumers and tomorrow far more abundant data will come from industry, business and the public sector" (European Commission 2020). Directing state research and innovation investments towards European industries that both hold a strong global position and are crucial to the next phase of digital transformation is seen as a way to (re)gain access to data infrastructure spaces. Here, they refers to industries such as low-power electronics needed for edge computing or sectors that hold a wealth of European data like health, transport, finances, energy, forestry and space. The Commission warns that the current level of European investments are only a fraction of that of North America and Asia and is urgently calling upon the public and private sector to increase their combined AI investment €20 billion a year. State investment in next-generation technologies as such are seen as a powerful tool to level the global playing field, decreasing the dependency on non-EU actors in the future data economy and turn the EU into a "global hub for data."

In addition, the white paper places a strong emphasis on the role of public institutions in the development of an AI market. They argue that a rapid uptake of AI across public and commercial sectors is needed to enable better access to public and consumer services for its citizens, access to new generation business products, and increasing the efficiency and effectiveness of public services like health care, transport and law enforcement. A close reading suggests that this call to action, specifically for the public sector, is aimed at gaining access to new data sources needed to train AI models and creating a demand-side for European made AI. Shifting the focus from consumer data towards industries data from sectors such as transport, energy, and health allows research institutions and companies to gain access to the wealth of data held by the public sector, who are considered to be a key producer of tomorrows data economy. In addition, the white paper argues that "it is essential that public administrations, hospitals, utility and transport services, financial supervisors,

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and other areas of public interest rapidly begin to deploy products and services that rely on AI in their activities" (European Commission 2020, 8). Healthcare and transport are identified as industries that are ready for AI experimentation as the technologies for these areas are "mature enough for large scale deployment" (European Commission 2020, 7). This language suggests that the uptake of AI by the public sector is not envisaged to meet the actual needs in the sector but as a vehicle to increase demand for those European AI products that are mature enough to be deployed but do not have a clear market yet.

The Commission acknowledges potential risks associated to the use of AI, "such as opaque decision-making, gender-based or other kinds of discrimination, intrusion in our private lives or being used for criminal purposes" (European Commission 2020, 1), but positions the state more as a catalyst rather than a regulator of the AI market. It foregrounds the notion that any new technologies bring with them both opportunities and risks and hints at the idea that certain risk will be the result of implementing dominant AI models that are developed and owned by non-European actors. While the Commission argues that these risks can be mitigated by investing in AI models build on European values like the right to human dignity and privacy protection, what the Commission frames as "trustworthy" AI, it is primarily seen as a way to create a unique European selling point that will allow companies to carve out a niche in the global AI market. For other harms that could lead to bias, discrimination and inequality, the white paper proposes a light-touch regulatory regime that aims to govern only those sectors that are labelled as "high risk," like health care. Meanwhile, it would allow sectors determined to be "low risk" to innovate without any new regulatory frameworks, instead proposing a form of self-regulation through voluntary labelling of AI models. As such, I argue that even when the Commission tries to address the risks associated with AI, the market logic prevails.

Conclusion

The central aim of this paper is to further explore the relationship between society and technology, where it moves away from the technology as the object of study towards the political structures that drive it. Here, I'm particularly interested in the state as a key actor that enables and is subjected to larger paradigm shifts and build on Jessop's (2010) notion that the state has the agency to intentionally shape society

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through its financial investment, policies and regulatory environment. While its role as a driver of contemporary technologies is often underexplored, a growing body of research argues that its investments and favorable regulatory environments have been instrumental to the emergence of the data economy. This phenomenon gave rise to data infrastructures that are dominated by a few large monopolistic companies that are primarily based in the United States and China, and in turn enables and restricts statecraft. Now that increased prominence for sustainable economic growth and societal well-being is attributed to data, I argue that the data economy has become an important site for statecraft, the state initiates and supports domestic technological developments with the goal to master emerging data infrastructure spaces.

In order to make sense of the state as a key actor that enables and is subjected to the technological paradigm, this paper engages in a close reading of the European Commission "White Paper on AI – A European approach" to explore how their political rationale and technology agenda is directed at shaping the state-market nexus. Here, I argue that the Commission proposes to wield Europe's financial investment, bureaucratic apparatus and regulatory environment to ensure the creation of a European AI market, which is justified by the belief that missing out on the next phase in the global data economy will be more harmful to Europe than any possible negative impacts of AI on society. The Commission hopes to further the European position on the global AI market by prioritizing state investment in "domestic" research institutions and companies, unlocking data held by public authorities as raw materials to train AI models, creating demand for the domestic AI products by encouraging the rapid adoption of these technologies in the public sector, promoting European values as a unique-selling-point of trustworthy AI and developing a light-touch regulation system. As such, it can be argued that states see major shifts in technological development as opportunities to (re)gain control over data infrastructure spaces by directing its centralized authority, legislative power, ability to mobilize resources and direct the bureaucratic apparatus to create a domestic market.

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For N.: I found a reason to keep living/
Oh, and the reason, dear, is you

Let's start with the end of the world, why don't we?
Get it over with and move on to more interesting things.
— N.K. Jemisin, *The Fifth Season*, 2015.

I've seen the future and left it behind.
— Black Sabbath, "Supernaut," 1972.

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At the End of the World, Plant a Tree

Considerations for the End of Human Time

Adam Greenfield

§ depressive sibyls and the horizon of catastrophe

Many years ago, while walking across the Congress Avenue bridge in Austin, Texas – famously, the one whose concrete arches shelter a colony of a million or more bats – the science-fiction writer Bruce Sterling warned me about an occupational hazard those of us professionally interested in the future tend to stumble into at the onset of middle age. It's always tempting, he argued, for the would-be prognosticator to mistake the narrowing of their own personal horizon for that of the world's: "Projection! Rookie blunder."

I was not, at the time, middle-aged, but Bruce's point lodged pretty firmly in my consciousness nonetheless. Because what I was then, and still remain, is mildly depressive. Not enough to derail my life in any particularly obvious way, thankfully, but sufficiently so to leave me with a vivid, visceral sense of what a more serious case would feel like. And from this vantage point, it seems plain that all of the attritional dynamics that accompany, or maybe constitute, depression – the premonitory awareness of looming catastrophe, the progressive foreclosure of possibility, the certainty that any attempts at recovery or repair are mere abject futility – are things one is just as liable to project outward onto the world as any of the angst that attends the

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process of aging. It's something I've had time to think about a good deal lately, in the course of this odd pandemic summer-in-abeyance: how much of the gathering gloom I perceive is actually out there in any objective sense, how much is just the distortive effect of my own depressive filter on the world?

Here, you make the call. This is what's in the two tabs most recently opened in my browser, neither of which have any overt connection to the pandemic. In one is Somini Sengupta's grueling *New York Times* account (Sengupta 2020) of how climate extremes disproportionately impact the most vulnerable people on Earth, limned with plenty of vivid and heartbreaking local detail; in the other, the Twitter stream of an artificial intelligence researcher named Gwern,[1] dedicated recently to musings about the GPT3 learning algorithm, and the swiftness with which it is likely to exceed human capability in a few specified domains of knowledge production.

They couldn't be more different tonally, texturally, in their relative concern for humanity or lack thereof, but what these two accounts have in common is the sense that profound and relatively near-term social reorderings are already baked into our way of doing things. And when I say "social reorderings," really what I mean is something more like a punctuation on our era. Both the journalist and the AI researcher leave the reader imagining a wavefront sweeping over the face of everyday reality and remaking it utterly, right down to the molecular level, and both lead that reader to the inescapable conclusion that whatever underwater earthquake triggered this tsunami to begin with, it was something that happened awhile back.

What do we call this curious regime of the unbearably drawn-out ellipsis we find ourselves inhabiting? Whether it resulted from the century or more in which we dumped greenhouse gases into an atmosphere more sensitive than we understood, or the gestation of something capable of outdoing us in the practice of our most cherished crafts in the racked processors of a blandly corporate research lab, it seems clear that some fatal change of state has already taken place. And all that is left to us now is to endure a more or less extended process of the consequences propagating through the interconnected systems of the world, until the point that they're made manifest in the everyday. In either case, whichever Sword of Damocles

1 twitter.com/gwern.

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hangs above us, the thread suspending it has already frayed and snapped; now we're just waiting, Wile E. Coyote-like, for gravity to do what gravity does.

Are both of these scenarios equally likely, though? It's hard to read usually jaundiced or constitutionally wary researchers discussing their impressions of GPT3 without getting a sense that something uncanny may well have stirred in the indistinct murk that separates mere "machine learning" from genuine "artificial intelligence." Trained on an unprecedentedly large corpus of human communication, the quality that GPT3 brings to bear on a problem domain might with some legitimacy be called "insight," inasmuch as it's no different, formally if not mechanically, from what we ourselves do when we write music, prepare a legal brief, diagnose a disease from lab-test results, or sketch out the spinal argument of an essay. If not this particular algorithm, then, surely its immediate successors will demonstrate to the most skeptical observer generative abstraction of a richness comparable to a talented human being, and therefore satisfy one of the basic criteria of "intelligence," no matter how we may otherwise tinker with the definitional goalposts.

And given such a capacity loose in the world, it becomes difficult to see how it does *not* radically transfigure all those fields of endeavor reliant on an underlying dynamic of pattern recognition and improvisationally variable but situationally appropriate response – which is to say, again, law, medicine, architecture, design and artistic creation, to name only a very few. But for all that, even now there remain a great many assumptions and dependencies standing between the ways in which we presently do things and a world remade by artificial intelligence. The thing being discussed in Gwern's Twitter stream may fall short of expectations, may never become consequent in the ordering of our daily lives, may simply never come to pass in any form its most fervent proponents (or critics) would recognize.

But heating? That's another story entirely. Far from being contingent, extreme heating is overdetermined; indeed, as Sengupta's article makes inescapably plain, for so many of us it's already here. Even if all the endlessly ramified operations of the global economy could somehow immediately, instantly and painlessly be rendered carbon-neutral, some degree of planetary heating would still be bound to happen. There remains some valid question as to just how much heating, where, and with just what impact on the delicately

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equilibrated systems that sustain all Earthly life. But wherever one sets the confidence bounds around this remnant uncertainty, enough oil has already been pumped to the surface, enough coal has already been burned, enough of their carbon has already been liberated to tip the atmosphere into a new state of being. Again, a not insignificant number of people on Earth, most of them very poor, already know exactly what this feels like – the *Times* piece checks in with an Afghan refugee in Athens, a working-class family of Houston, a village in the petrochemical sacrifice zone of the Niger Delta, and a Ch'orti Mayan farmer in the "Dry Corridor" of Guatemala, among others – while the rest of us are just sitting around, waiting nervously for the bill to come due.

And this at 415 ppm carbon dioxide in the atmosphere and a single degree Celsius of warming, when both numbers are rising fast. On just a few moments' reflection, it's enough, easily enough, to convince me that whatever distortion I may be projecting onto it by virtue of my particular neurochemistry, the fundamental shape of Earthly reality is indeed every bit as fucked as it appears to be. The wager here isn't that big heat is coming, or even that billions of people will experience its deleterious effects directly and for themselves; those are certainties. The specific assertion I'm making is that the combined direct and indirect consequences of that heating will in fairly short order exceed the capacity of our social, technical, political and economic systems – in other words, our planetary civilization – to contain them. And if by "short order," I mean "at some point in the next ten to fifteen years," that's probably optimistic. This is our world now. These are the skies under which we will live out the rest of our days.

§ this place is not a place of honor, no highly esteemed deed is commemorated here

Having once accepted this, the question, of course, is what any of us can do about it. What happens when we not merely take the all-but-complete unwinding of everything we've ever known as a given, but face up to its implications?

One school of thought is straightforward: grab hold of everything you can, while you can, and fuck the rest. I promise you that this is only barely a gloss on the "case against helping the poor" elaborated by the ecologist Garrett Hardin in a 1974 article (Hardin 1974) on

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"lifeboat ethics," in which acts of murderous selfishness are justified on the basis of an amateurishly worked-out utilitarianism. It is Hardin's position that on an imperiled planet, we owe no debt of care whatsoever to those carefully depersonalized others whose claims to an equitable share of dwindling resources ostensibly threaten our own precarious ability to survive. Though, to be sure, nativism never requires intellectual rationalization, there is nevertheless a direct line from Hardin's I-got-mine ethics to the Orbans and Salvinis, the Pegidas and Golden Dawns, to all those who'd rather see climate refugees drowned in the Mediterranean than offered a new lease on life in Europe.

To a first approximation, anyway, there are no degrees of difference whatsoever between Hardin's depiction of things and that offered in Jean Raspail's notorious novel of the year before, *The Camp of the Saints* (Raspail 1994),[2] in which the "numberless disinherited people of the South," in taking flight from ecological catastrophe, swamp and overwhelm the last redoubts of a struggling European civilization. Astonishingly, though, if the distance separating Raspail's racism from Hardin's remains unmeasurable by any instrument known to science, the former is properly understood as a frank white supremacist and immediate forerunner of the contemporary extreme right, while one can in Current Year still use the latter's name in respectable company. His "tragedy of the commons" has passed into everyday language, despite being little more than a thinly-veiled, ideologically motivated and profoundly unempirical attack on the notion that people are capable of mutuality and self-regulation in their use of resources.[3] But if there really were such a thing as cancellation, Hardin would make a particularly strong candidate for it: not merely is his conception of things *prima facie odious*, his depiction of negotiation over the use of resources as necessarily a zero-sum war of all against all flies in the face of everything contemporary anthropology teaches us about human cooperation. Manifestly the

2 Again, be cautioned that this is an explicitly white-supremacist work from an explicitly white-supremacist publisher, just as you'd expect of a text singled out for praise by the likes of Steve Bannon and Stephen Miller.

3 As we humans have been doing, observably and consistently, throughout our history, and methodically enough that an analysis of the conventions involved could win Elinor Ostrom a Nobel Prize (see Ostrom 1991).

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production of a mutilated soul, this perspective requires and will receive no further consideration here.

Another school of thought counsels – and again, this is only the merest paraphrase – that the only way out of the crises besetting us is through. Nurtured on the strong linearity of historical materialism, the current known as left accelerationism argues that properly enlightened humanity ought to understand the hot dense mass of late capitalism as a gravitational slingshot capable of hurtling it toward a liberatory horizon, even as the clock draws closer to planetary midnight. We can leave the zero-sum scarcity games behind if we "unleash [the] latent productive forces" generated within capitalism itself, treating this stage of Amazons and Tencents slouching toward monopoly as a dialectical engine almost helplessly generating the very tools required to bring about its disassembly and eventual replacement.

In practical terms, this evidently means a commitment to the fastest and most aggressive possible elaboration of the information-technical capabilities that first become possible in late capitalism: ubiquitous networking, distributed sensing for near-real-time demand assessment, automated digital fabrication, autonomous intermodal logistics for fulfillment, and artificial intelligence for forward economic planning, with self-ownership of the means of production in the form of hybrid, transhuman entities encoded on a blockchain, and some degree of nanotechnological geoengineering thrown into the mix to mitigate or reverse (!) the worst climatological effects of the Anthropocene overshoot. So far as I understand it, the idea is to upend the surplus value theory by introducing factors of infinity into its equations, bringing the capitalist era to a formal conclusion and (not incidentally) liberating humanity from labor and drudgery forever. This would represent not so much the continuation of politics by technical means as its thorough ungrounding: an evacuation or even annihilation of the terms on which most of what we mean by political economy has rested for the past few hundred years.

Here I'm simply inclined to agree with Audre Lorde (2017) regarding the odds that one might ever dismantle the master's house with his own tools, let alone build with them something more felicitous, but accelerationists really believe this stuff. What's still more intriguing to me is that they arrived on the scene already equipped with a clear sense of what was preventing the emancipatory breakthrough from

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igniting more broadly: anarchists, Wobblies and Bookchinian municipalists. "The most important division in today's Left," Alex Williams and Nick Srnicek maintain, in their seminal "#Accelerate: Manifesto for an Accelerationist Politics" of 2013, "is between those who hold to a folk politics of localism, direct action, and relentless horizontalism, and those that outline what must become called an accelerationist politics at ease with a modernity of abstraction, complexity, globality, and technology" (Williams and Srnicek 2013).

Srnicek and Williams (2015) develop this argument at significantly greater length in their subsequent book *Inventing the Future*, which at least has the virtue of dispensing with any cringey hashtags in the title (and contains a solid institutional analysis of neoliberalism into the bargain). But really most of the necessary stiletto-work has already been done by the coinage folk politics, which is both rhetorically effective and, as those of us with longtime experience of left organizing know full well, not without a certain snide justice. It's the hardened Leninist operative of Doris Lessing's *The Good Terrorist* (1985), coolly regarding the hopelessly disorganized rabble of squatter "activists" next door, or the amphetamine-taut, black-clad Velvet Underground newly arrived on the psychedelic West Coast, sneering at the Grateful Dead and their fuggy-vague, buckskin-fringe acolytes. If it's not quite as repudiative as the term arch- or ur-accelerationist Nick Land uses to denote the folly and futility of conventional, all-too-human politics ("monkey business"), neither does it leave you with any doubt of their feelings regarding the sophistication of this way of doing things.

It's true that the limits of participatory and deliberative politics are painfully obvious to anyone who's ever attended a city council meeting, that radical "direct action" can all too often amount to little more than flyposted stickers and spraypainted slogans on the walls of a decidedly indifferent city, that a commitment to inclusion often means interacting with people poorly equipped to make productive contributions, and that making too great a fetish of horizontal organization is generally a fairly effective way of producing inertia. Moreover, it's not as if organizers are unaware of the perils lurking in an unconsidered embrace of the local for its own sake, or that sympathetic urban sociologists have not in fact developed a minor body of thought around ways to circumvent this "local trap" (see e.g., Purcell 2006). These dynamics are well understood, even or perhaps especially among that cohort the accelerationists regard as hopelessly

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retrograde devotees of a corny and discredited mode of politics. But they scarcely seem like sufficient reason to dispense with a suite of powerful, widely-applicable, low-cost, low-barrier-to-entry tools for making change. And of course it's nothing short of absurd to depict the horizontalist left as an entity in any way capable of standing athwart, or even markedly slowing, the onrushing pace of technical development.

What makes my beef with accelerationism of this stripe more than just an(other) internecine slap-fight on the left has to do with the degree to which it props up an already quite dominant tendency in the culture. When accelerationists implicitly propose stepping back from the difficult, exhausting and emotionally taxing work of organizing for justice at the interpersonal and intercommunal levels, and counsel instead the deployment of technology to automate the revolution, what they are in effect doing is throwing in with a mindset I think of as calculative instrumentalism: a paradigm in which people are reduced to operands and generators of usefully actionable data, while the digital enumeration, quantification and characterization of population segments are more important than any subjectivity the individuals involved may happen to possess. It will likely not have escaped you, of course, that this is the selfsame model on which the reigning sociotechnical order is founded, the single set of values and framings underlying both the "surveillance capitalism" of the West and the draconian social credit systems of the Chinese state. So, however much it may be pleased to present itself as critical, accelerationism of the left displays a complacency with the present way of doing things that starts to look a whole lot like acquiescence, or even complicity. And in any event, it's hard to avoid noticing that the fully interlinked, frictionlessly globalized milieu on which accelerationists like Srnicek and Williams predicate their core argument was being eroded from beneath even as they wrote. (Even at its peak, late-capitalist modernity was never simply an open platform one might simply write an API for and run nifty socialist applications on top of.)

That erosion, which is only likely to worsen in the months and years ahead, presents this line of thought with a major problem. If, post-Haraway, it's become something of a cliché to observe that all of us are always already cyborgs of one sort or another, this nonetheless remains profoundly and intimately true: to live in modernity is to live in extension, spread out across a sprawling profusion of hybrid and

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heterogeneous life-support systems. For so many of us, our ability to act in the world – in not a few cases, our very sense of self – is undergirded by an elaborate and widely distributed infrastructure of pharmacomedical technics. The lineaments of our selfhood now come to us from the far end of a perilously extended supply chain, their journey to our doorstep subject to a litany of vagaries both entirely predictable (heavy weather, spiking fuel costs) and all-but-random (territorial disputes and regulatory frictions, piracy, difficulties securing insurance, ransomware attacks on the planning software, even volcanic ash in the stratosphere). Worse yet, constraints imposed by the universal late-capitalist doctrines of just-in-time manufacturing and lean inventory render each linkage along the way so tightly coupled to the next that the entire meshwork of connection has become brittle and acutely sensitive to disruption. And what political accelerationism of any sort rarely seems to reckon with is how very contingent all of this is, how easily it can all come crashing down.

To recall the first month or so of COVID lockdown, or still more so to look ahead to the endemic rigors of a hard Brexit, is to contemplate an existence without prosthesis or enabling technology, without reliable access to contact lenses, insulin pumps, mood stabilizers or hormones. Note that it doesn't take anything nearly so consequential as a four-degree Celsius rise in global temperature to achieve this, or the wholesale transfiguration of the terms of existence at the hands of a rampant AI. It just takes a government of not-particularly-capable placemen, faced with a situation whose mounting complexity has exceeded their ability to comprehend it, against a backdrop where whatever local, state and transnational institutions might have served as a check have all quite deliberately been hollowed out. If it seems like it might be difficult to slingshot forward to fully automated luxury communism under such circumstances, well, maybe that's because it plainly would be – unless, I suppose, you've got a far greater faith in the raw power of dialectics than I do. In fact, everything left accelerationists like Srnicek and Williams call for assumes the persistence of a sociotechnic settlement that is radically contingent and can evaporate, locally or globally, with the proverbial wave of a hand.

Giving them the benefit of the doubt, let's assume left accelerationists of the Srnicek-Williams tendency have been sobered by the unfolding of events since the publication of their #manifesto, and have latterly had second thoughts about the degree to which they

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wish to place their bets on the ongoing availability of late capitalism as a platform on which to organize its own transcendence. Whether they've yet been tempered in this way or not, though, it's past time we start to think coherently and productively about a way of life – and a rewarding, just and fruitful one at that – based on tools and capacities to which we have permanent recourse, no matter what else happens.

§ the system was blinking red

It's not as if the understanding that we live on the upper floors of a teetering house of cards is especially unusual. If the unnerving fragility of the complex systems that underwrite everyday life in the wealthy North and its peak-development exclaves elsewhere is now the stuff of ordinary consciousness – underscored every time rolling blackouts are imposed or a Day Zero drought crisis looms – a sentinel twitching warning us that something in our way of organizing the world was dangerously off has resided in our collective awareness for half a century or longer.

Though manifestations of this awareness had shown up earlier, most notably in the groundswell of ecological activism that followed the publication of Rachel Carson's 1962 *Silent Spring* and reached an initial culmination in the inaugural Earth Day of 1970, it first appeared to most of us in the form of a popular discourse around "sustainability." This was a framing which first started to gain traction during the decades leading up to the turn of the millennium, a period in which the impact of human activity on the ecosphere had finally become too difficult to deny, dismiss or ignore. Familiar to us as the stuff of governmental white papers, brightly-branded corporate social responsibility initiatives, "green" product design, municipal recycling drives, best-practice certifications and any number of philanthropic or academic funding opportunities, sustainability was a doctrine that aimed to preserve the mighty consumer engine of late capitalism (and its politically sedative effects) by tinkering at the margins of its world-heating repercussions, shaving a few points off the rate of change of the rate of change.

As anodyne and pointless as it might have been, though, it soon became clear that even this goal would remain beyond reach. And this was because sustainability harbored at its very core an outright lie: predicated as it was upon the relatively rapid drawdown of an irreplaceable store of fossil energy, there was not a single thing about

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the achievement of modernity that ever could have been sustained indefinitely. It was a one-time shot, an all-or-nothing gamble on riding the high energy density of resources laid down millions of years in the past to a point at which planetary civilization would be capable of organizing itself around solar and wind power (Malm 2016). And while plainly acknowledging this state of affairs was out of the question – it would have cut far too close to abandoning the elucidating logic on which the late-capitalist bounty depended – by the time of Hurricane Katrina it was clear to most observers that the sustainability discourse was, as the British like to say, no longer fit for purpose.

By this time, however, an entire sector had grown up around sustainability, both a generator of potent alibis for business-as-usual and an employment scheme not without a certain economic salience in its own right. Rather than retiring this semantic niche, then, and standing down all the churn of discursive and economic activity it supported, what happened was a precession of the buzzwords. While sustainability still occasionally crops up as a topic of discussion among those individuals and institutions that are more than usually behind the curve, throughout the 2010s it was progressively effaced as an object of thought by a new term.

These days, the conventional institutional response to destabilizing climatological events is generally articulated in terms of a discourse of "resilience," defined as a system's capacity to retain its structure and function after having been exposed to some exogenous shock. And so long as we limit ourselves strictly to a consideration of the ecological and physical systems whose behavior the term was originally meant to describe, this is a perfectly useful concept. But as far back as 2013, the geographers Danny MacKinnon and Kate Driscoll Derickson were already arguing that as a prescription for human systems, this rhetoric – then just emerging from academia, and now of course inescapable across the public and private sectors – was just as intellectually bankrupt as the discourse of sustainability it was intended to replace (MacKinnon and Derickson 2013).

On a close reading, the rhetoric of resilience can be understood as a tacit admission that sustainability failed, and therefore, by extension, that the project of high-complexity human civilization on

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Earth has already crested.[4] "Resilience" is to say that while we can no longer forestall the train of climate impacts bearing down on us, perhaps we can at least engineer our systems, social as much as technical, so that they recover from each successive setback in as timely and complete a manner as can possibly be achieved. I imagine that the advent of this new rhetoric came as some relief to the entire stratum of sustainability-oriented management consultancies, conference organizers, "thought leaders" and grant writers who were in danger of finding themselves in an untenable position; having styled themselves experts in the one thing, they most of them now pivoted smoothly to offer their insight into the other.

But again, an impasse. If somewhat obvious, the question MacKinnon and Derickson posed of the new rhetoric was nonetheless one nobody else seems to have thought to ask: if being resilient is to bounce back, just what is it we're supposed to be bouncing back to? If the order of things is currently unjust, that is, wouldn't attempts to restore the *status quo ante* following some disruptive pulse event stabilize that injustice, if not set it in stone? And isn't it adding insult to injury to ask that already-desperate communities shoulder the costs and burdens of this stabilizing work, all in the name of conserving or retaining a system that never once worked for them?

MacKinnon and Derickson wind up arguing that resilience itself ought to be tossed on the scrapheap, preferably to be supplanted entirely by a rather less totalizing approach they call "resourcefulness," more attuned to the needs and capacities of communities under pressure. And here the ear perks up, because of all the responses to societal collapse we've considered, resourcefulness seems to allude most directly to a capacity that one might nurture and develop, both personally and communally. Beyond a few bullet-pointed desiderata, though, and possibly out of an entirely justified concern that it not be reified and marketed in the same way that sustainability and resilience were before it, MacKinnon and Derickson don't say much about what resourcefulness might look like. Having established that their fundamental paradigm is "one in which communities have the

4 In context, the metaphoric expression I might otherwise turn to in order to describe such a point of maximum development is precisely inapposite. Whenever it is that a "high-water mark" eventually comes upon us, it will be one that leaves the towers of our coastal cities waistdeep in the unrelenting waves.

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capacity to engage in genuinely deliberative democratic dialogue to develop contestable alternative agendas and work in ways that meaningfully challenge existing power relations" (MacKinnon and Derickson 2013, 263), they never go on to flesh out the idea in detail.

But perhaps it's not their responsibility to do so. Sometimes diagnosis is contribution enough. Maybe it's up to us to develop this notion of resourcefulness further.

§ if I look hard enough into the setting sun

Of course, there are many different kinds of resourcefulness. Media theorist Alison Powell points out that "people are endlessly resourceful already, in the impossible conditions we all variously live in," and that "intersecting challenges invite different resourcing" (Powell 2020). This is undoubtedly the case, as will be affirmed by anyone who has witnessed the hustle and ingenuity it takes to eke out a dignified existence as a single mother, or a client of social services, or for that matter both. If many of us know people who model this sort of behavior in their own lives, though, or perhaps even are fortunate enough to be one ourselves, it still helps to have a common point of reference, something to point at and say: that, that right there is part of what I mean when I use this word.

For me, one useful point of reference is a wordless series of videos I've recently taken to watching on YouTube, in which a skinny, shirtless white man squats in a clearing somewhere in the jungles of Australia's Far North Queensland and – equipped with no more than the living biome around him and a working knowledge of physics – painstakingly bootstraps himself from just about literally nothing to a reasonable standard of comfort.

This is *Primitive Technology*, the life/work of someone named John Plant.[5] Given the locale he's chosen for his experiments, I confess to having significant concerns about the erasure of the ultimate sources of Plant's knowledge. But there's refreshingly little in the way of machismo to his videos, and absolutely none of the paranoia, coded racism and red-in-tooth-and-claw chestbeating otherwise endemic to the survivalist genre. In fact, Plant eschews the tacticool trappings entirely: the aesthetic is wabi-sabi, even "Zen-like." Think sandals of woven reed, not operator chic.

5 Perhaps inevitably, the video series has been turned into a book (Plant 2019).

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For all that Plant offers a perfect vignette of rugged settler-colonialist individualism in its preferred self-image, there are many qualities to appreciate about the *Primitive Technology* videos, and two in particular that I cherish. The first is the from-first-principlesness of them. All but naked in his clearing, Plant starts by hand-crafting the most basic tools: axe, awl, cordage. From this inventory of simple machines, each new thing he contrives allows him to essay some still more elaborate project, in an upward cascade of enabling technology that culminates (after an elapse which is elided in the videos, but which cannot be less than many weeks) in the comfort of a thatch-roofed, brick-walled shelter, complete with hearth and chimney and a water-hammer running in a nearby creek to automate the pounding of grain for dinner. If it's almost always a serious blunder to try developing a philosophical system from first premises, it's fascinating to watch someone developing the material substrate of an entire culture from a similarly cold start. It's like seeing the tech tree of a *Civ* game recapitulated in real life: *this* and *this* get you *that*; put all those together and you can make one of *these*. He might not have made it quite as far as Replaceable Parts (yet?), but Plant's rigor offers us existence proof that even if the material basis of our being falls back to virtually nothing, some real measure of its comforts can be rebuilt with insight, patience and humility.

The second thing I love about *Primitive Technology* is a little more subtle, and it's something I've inferred from glimpses rather than anything Plant's ever made a conscious decision to highlight: at their best, many of the things he makes by hand bear the imprint of a sophisticated aesthetic I'd be hard-pressed to call anything but "modernist." These potentially crude implements, with all their components harvested from the forest, are instead marked with a simplicity, refinement and regularity that feel – but perhaps this is my ignorance speaking[6] – like the signature of an advanced industrial-design culture. (Plant's vent-gridded furnace, in particular, might be the handicraft of some Flintstonian Jony Ive.) The lesson I learn from this is that even when starting from bedrock zero, those of us raised in a

6 Again, thinking of this as in any way particularly contemporary might very much be an artifact of my prejudice; the Romans, notably, developed standardized rolling stock to support military logistics, and more broadly imposed what we'd now think of as interoperability standards on their imperial mobility infrastructure (see also Amale et al. 2000).

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technically sophisticated, high-complexity civilization bring with us everything we've internalized about the design of technically sophisticated, high-complexity systems, and are thereafter able to apply these insights to everything we make. It may not be precisely what the accelerationists meant about late capitalism being a dialectical engine capable of generating the tools necessary for its replacement, but it is nonetheless an advantage and it can be put to use.

I wonder if I'm alone in perceiving in Plant's work a concern for care and nurture, or perhaps more simply for shelter from an environment whose implacable indifference might easily be mistaken for hostility. It seems implicit to me, though, that this is the purpose behind all his ingenuity, exertion and craft: he makes tools to make bricks, bricks to make walls, walls to make an enclosure, and ultimately an enclosure so he has a safe space in which to rest and ponder the further development of his technique. The Heideggerian progression of building, dwelling, thinking is intact in *Primitive Technology*, and it seems directed toward this particular end.

So here's a working definition of resourcefulness, based on my understanding of just what it is that Plant is doing. Its development first requires that we learn to see the world differently, teaching ourselves to scan the local environment through eyes attuned to the useful properties, capacities and affordances of the things around us. Second, we remind ourselves that utility isn't always simply ready-to-hand, and that some material or topological transformation might be necessary to release it from a given object (the reeds need to be carefully woven and braided before they can serve as cordage, the clay needs to be baked before it can bear gravitational load as a brick, and so on). Third, we apply to these tasks everything we carry with us from the years spent in a culture lucky and rich enough to achieve refinement. There may be something to be said, as well, for the cultivation of a critical metaskill on which all else would seem to depend, a general orientation toward openness, plasticity and skill acquisition. Finally, we understand that the point of all this is never resourcefulness-in-itself but resourcefulness-toward-something, and that the "something" in question is the provision of shelter.

Except in the very worst scenarios of societal collapse (by which point I, at least, would honestly be well past caring), I don't suppose that even profound disruptions would deprive us of the material bounty all around for long enough for the fabrication techniques

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demonstrated in *Primitive Technology* to become practically useful in day-to-day life. So the most interesting questions Plant's oeuvre poses for me are analogical. How much of what he achieves in the register of materiality has parallels for the register of conviviality? Where would you start if the shelter you wanted to craft, under the least propitious circumstances, was psychic rather than physical, and scaled to the collective rather than a single individual? And of the tools you'd need to build such a thing, which do we retain access to, no matter what else happens?

One way of answering (and go ahead and assume it will be *my* way) can be found in precisely the set of qualities accelerationism looks down its nose at. Almost by definition, we will not experience the undoing as a single global event, but rather as one in an endless propagation of intermeshed local crises stretching far beyond our perceptual horizon in space and time alike. And whichever aspect of this hypersurface reveals itself to us at any given moment, it is something we will have to confront with the people around us, those who constitute our immediate physical community. It seems to me that under such circumstances, any effort at building up shelter from degree zero therefore involves a small-scale politics of local deliberation, based on the capacity to assess, propose, discuss, debate and decide. If anything, these skills become more and not less vital when a community finds itself under heavy manners, because the consequences of bad decisions and the costs of allowing even a small minority of members to becoming alienated from the group are that much starker. In this context, resourcefulness might mean nothing so much as refining our capacities to listen, to empathize and to hold space.

Put somewhat differently, the "localism, direct action and relentless horizontalism" that Alex Williams and Nick Srnicek find so unutterably corny strike me as having the signal virtue of Plant's tools. As organizing principles, they're robust and hardy, capable of being deployed at just about any time in just about any place by just about anyone, elaborated using only the things they have at hand and the resources even a modestly generous environment affords them. They require some skill, certainly, but no sensors other than the bodily ones we show up with, no calculation beyond the rudimentary tabulation involved in assessing the prevailing sentiment in a room, no storage beyond that a community wishes to dedicate to

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the preservation of its institutional memory. They are always there for us to use. So it's imperative to resist depictions of this way of organizing things as somehow being retrograde, or not taking full advantage of the sociotechnical possibilities afforded by our particular moment. If anything, I'd argue that these techniques are more sophisticated than those imagined by the accelerationists, by virtue of developing greater and more broadly useful competencies in us, and being far better suited to a time of uncertainty and involuntarily mobility. (We will find that emotionally present conversation, in particular, is a portable technology in a way some elaborate armature of nominally postcapitalist automated responses to the problems of food, warmth and shelter simply is not and cannot be.) If organized with even a modicum of skill, too, communities knit together horizontally ought to display some of that desirable quality the otherwise awful Nassim Nicholas Taleb usefully defines as "antifragility," in that the bonds between people get stronger as stress is applied to them.

And consider, by analogy with that second factor of Plant's, that what I'm proposing isn't simply that we can gather in some latter-day folkmoot to discuss matters of concern, but that many of us will by now know how to do so with some refinement. We're not starting from nothing, as it happens, or not exactly: just as Plant's tools and engines bear the traces of their maker's origin in a refined industrial design culture, whatever convocations we devise ought to reflect our origins in a society where institutions at every scale run on reasonably consistent and well-assimilated rules of order. It's likely that enough of their rudiments have filtered down to us (whether through direct experience, or some reflection in the popular culture) that at least one or two people in every neighborhood-scale group have some sense of how to run a productive meeting. And for all the relative obscurity of newer innovations in democratic praxis like sociocracy,[7] a consensus-based form of governance in which groups of people agree to commit themselves to courses of action on the basis that they are "good enough for now and safe enough to try," these are nevertheless in the air, there to be experimented with and adopted if found useful.

7 A basic introduction to sociocracy can be found at https://www.sociocracyforall.org/start-here/.

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Perhaps more to the point, we carry with us the accumulated psychoemotional wisdom of the entire post-Freudian epoch, distributed throughout the culture as inspirational Pinterest quotes, lifecoach bromides and Peloton-instructor platitudes. We know what the Stoics demand, what the Twelve Steps involve, that there's always an opportunity to Fail Better and that The Body Keeps The Score. What if all our concern for such technics of self-care was a premonition, an antlike laying-in of stocks to sustain us against our hour of need? Plant offers us one roadmap to becoming the kind of people we'll need to be in hard times, when all we've ever known are good ones, and here is another.

While you could certainly and with some fairness choose to regard such decontextualized encapsulizations as shallow, superficial and unsatisfactory, I prefer to think of them as *distilled*. Part of the project of becoming-resourceful, then, might involve committing such distillations to memory in a way such that recourse to them in difficult moments is all but automatic. It's in this light that I understand the mantra of "improvise, adapt, overcome" one of my drill sergeants hammered into us all throughout basic training, and that I only much later realized he'd copped from a lesser Clint Eastwood movie: I continue to live by it a quarter-century later, even knowing its true provenance, and have repeated it to myself often enough for it to have become an action pattern, a pre-conscious priming that still informs my response whenever I'm confronted with a new and challenging situation.

As Powell suggests, though, perhaps resourcefulness is merely a matter of recognizing and rewarding the currently undervalued competencies people already have – or, at the risk of asking still more of those who already shoulder a disproportionate share of the burden involved in keeping the world running, simply getting out of their way and letting them exercise those skills on a larger scale. This also implies a collectivity sufficiently primed and self-aware to have a map of its members' various skills, such that when faced with an emergent situation it knows just who knows how to cook for large groups, who you turn to when you need to pick a lock, who is able to train others in the basics of competent grief counseling, and so on. We could then define a resourceful community as one able to pluck the strands that bind it together and find just the right nodes resonating in response.

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And better still: a community where, to the greatest degree achievable, folks cross-train, so useful skills are distributed across the entire network, and no one person has to bear the weight of being the only trained medic or mechanic or beekeeper. One of the signature insults of the neoliberal hegemony, of course, was the way it individualized everything, and in atomizing us deprived us of the support of a functioning sociality. But there is a direct relationship, or still better a feedback loop, between resourceful communities and the individuals that comprise them. One could imagine these capacities being developed consciously and in synchrony with one another, the achievement of such lifesystems forging a unexpected link between "organizing" in the Saul Alinsky[8] sense and that common in the military (where the term refers to scrounging, pilferage and other techniques of opportunistic and at best semi-licit acquisition).

§ at the bottom of the spiral lies the silence

All of this is moot, of course, if one happens to succumb to any of the numberless ways in which death finds people in the midst of societal unwinding. It's all too easy to imagine dying pointlessly of heat exhaustion when the power fails in the municipal cooling center you've sought refuge in, and the air conditioning along with it; of a cancer that might have been readily treatable in the days when chemotherapy drugs and replacement parts for the linear accelerator in the radiotherapy suite arrived by the palletload; being shot as a looter by a jumpy, hurriedly deputized teenager in hand-me-down body armor, when hunger and desperation have driven you onto the streets past curfew; smothering in the blackness because the coyotes have forgotten or simply did not care that refugees being smuggled in a shipping container need more ventilation than the Playstations listed on the manifest. Dying in the third "500-year flood" in ten years, in a freeway-leaping wildfire, at the hands of a bored sniper. But in any event dying. Though it would be foolish to argue that these are not, in some reasonably strict actuarial sense, among the most likely fates awaiting us in the period of maximum undoing, let's assume we manage to get past them and survive into some marginally more stable time after. What then?

8 For the most concentrated expression of the ethos guiding the professional work of community organizing in the United States during the New Left era, see Alinsky 1971.

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The most harrowing depiction of the end of the world I know is not any of the more obvious candidates – *Threads*, say, or *The Road* or even *The Last of Us* – but that contained in Béla Tarr's 2011 film *The Turin Horse*. Tarr's is a vision of civilization expiring without much in the way of violence, indeed almost without comment or notice, extinguished in the dark. And of all the causes of apocalyptic breakdown explored in film, fiction and game, the one on display here strikes me as being the hardest to prevent, and yet the most critical to prepare for and defend against.

The unique horror of *The Turin Horse* is that the sundering of connection at the undoing of this world appears directly related to a willed failure of communication. Tarr's protagonists, a peasant father and daughter marooned in a farmhouse at the far eastern edge of Empire, suffer from a disinclination to communicate with one another so profound that ultimately it is indistinguishable from an inability to do so. Divided first from the world and then from one another, they are molecules broken down to atoms which in their turn are broken down to nothing. They succumb to resentful, nullified silence as the systems of the world shut down and the light fades all around them.

Might they have survived if they had been able to forge a meaningful link to one another, or even worked out some kind of modus vivendi with the strangers who have come to plunder their well? Doubtful. The world is ending. But they go down to its end alone, and there is something in that which seems to multiply the awful desolation of it.

Here depressive projection may actually be rearing its head, because at the moment it feels like we are well on our way to that disassembly of the social, and everything it entrains. With COVID has come a clear premonitory sense that the most basic systems we rely upon for our health, connectedness and wellbeing, the maintenance of our bodily selves and of our communities, have started to sunder, tear apart and break down. Perhaps it just feels this way to me because the governments of the two polities in which I am the most emotionally invested, the United States and the United Kingdom, remain in the grip of almost uniquely incompetent managers, and answered the crisis with ineptitude so mighty it truly cannot be distinguished from active malice. It may well be the case that things wouldn't feel quite this apocalyptic if I lived in Wellington, or Seoul, or Taipei**...** but here we are.

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And far from summoning us to any sense of common purpose, the official response to the pandemic on both sides of the Atlantic has exacerbated the fault lines that developed and were allowed to fester all through the long years of neoliberal complacency, with lethal consequences. After an initial and, I want to say, instinctual flush of high seriousness and mutual care, the popular reaction to the circumstances we find ourselves in has been broadly marked by an amplification of all the ugly qualities and characteristics that so often color the everyday late-capitalist lifeworld: solipsism and self-absorption, mutual wariness and hostility, preemptive irritation with the demands of others, and an evident conviction among many that to display thoughtfulness, consideration or vulnerability for even so much as a moment is to invite being taken advantage of. This has left an epidemiologically significant minority proudly, performatively unwilling to take even the most basic steps to protect vulnerable others – leaving a few feet between bodies on the sidewalk, say, or suffering the indignity of a few hundred micrometers of fabric over the nose and mouth – evidently because doing so would somehow abrade their sense of their own specialness. And so fiercely reactive is this minority, so ludicrously and ferociously protective of their perceived prerogatives, that it's nearly impossible to see how one might open conversations about this, even ones carefully couched in the language of accommodation and understanding. Indeed, it has occasionally been quite literally fatal to attempt doing so. If this seems faintly familiar, it ought to: it's nothing other than Garrett Hardin's armed selfishness.

It's instructive to regard COVID as simultaneously a preview of how our societies will respond to future catastrophes of similar scale – i.e., incoherently, with lethal consequences – and the first in a series of such events that is already underway, that will progressively unweave the world, and that in so doing will make each successive shock harder to recover from. If the calamities we now face are physical in nature, though, challenges whose contours are measurable in basic reproduction numbers or parts per million, the architecture of our response to them belongs firmly to the realm of the social. And what we can already see is that our failure to develop an ethic of sustained care for one another capable of bridging the real (and, it should be said, often legitimately founded) divisions in our society spells doom for any project of survival.

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That way lies *The Turin Horse*. Each refusal of connection takes us one step closer to that miserable hovel at the tail end of human time, where we are all become strangers to one another and there is nothing left for us to do but watch the last guttering embers of everything that held us together turn to ash and dark and silence. If we wish to avoid that fate being piled on top (or concluding the sequence) of all the other sorrows waiting for us, we'll have to work for it.

§ where black is the color, where none is the number

The position known as anarchoprimitivism has always seemed like the silliest sort of conceit to me, prone as it is to macho posturing and eminently ripe for capture by ecofascism besides.[9] But the black joke is that time will make anarchoprimitivists of us all. It seems likely to me that those of us who do make it through an acute phase of rupture will live to see the large-scale state fail, in just about every way but in its capacity to organize harm. Materially, the effortless refinement and diversity of the products we've come to expect from our advanced industrial base will disappear from the world. The epochal tide of arrangements we're pleased to regard as "civilization" will recede from human lives, for the first time since the development of agriculture twelve thousand years ago, and the material-energetic settlement on which our lifeworlds are founded along with it. Our new circumstances will leave us with little choice but to get better acquainted with our own paleocapable selves, and whatever ability we retain to organize for collective survival at the most immediate local scale. And whatever this might imply in terms of our physical talents, it will most definitely require the capacity to remain emotionally present and available to the others around us, under conditions of shared, sustained and almost unbearable sorrow.

There will no doubt be those of you convinced that in arguing this I have, after all, projected my own morbidity onto the world, and that we'll surely retain the collective wherewithal to maintain into the indefinite hot future some semblance of our present-day ways of doing, making and being. About all I can do to try and convince you otherwise, at this late stage in the proceedings, is cite the well-known finding that depressives actually perceive the world more accurately,

9 While, to be sure, its scholarship is open to question, the founding statement of contemporary anarchoprimitivism is unquestionably Zerzan (1988).

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and that what our society is pleased to regard as psychological normalcy is itself a form of induced or willed self-deception, a functional adaptation to the overwhelming odds against stability and order in a universe unremittingly hostile to them. You don't need to hoist us up onto pedestals, or make some kind of apocalyptic sibyl of us. But when the stakes are this high, in this curious season of phony war or calm before the storm, perhaps it's worth listening carefully to the folks around you who happen to be afflicted with clarity of perception: this is happening.

This is happening, as even the consumer market now recognizes. (Consider Vollebak, who sell a "50,000 BC Jacket" designed to address the needs of nomads traversing a darkening world, or similarly the tagline recently adopted by the Canadian technical-outerwear brand Arc'teryx, "Built for what's to come," which seems to allude to the onset of civilizational turbulence with sly, having-it-both-ways bad faith.) If even the market gets it, then so can any of us. I fully understand that denial is a protective mechanism, and I'm sympathetic to those who, for whatever reason, would prefer to protect their raw pith from the terror, loss, sorrow and grief sure to afflict everyone who makes it through these next few years, to accompany them all the remaining days of their lives. But I'm no longer inclined to make concessions to those who persist in their refusal to acknowledge the thing which is right in front of us. In another context, we'd call their insistence on being furnished with ever-higher levels of evidentiary support "sealioning," and it is wasting time and energy we simply do not have. The thing we so greatly feared is come upon us.

My friend Alison, who I cited above, came through Terminal 5 at Heathrow a few days ago. She texted me a picture she'd snapped of the departures board, normally a full three columns across with flights, and on this day displaying a mere ten, heading anywhere at all. "Globalization as we knew it is over," she captioned the picture, and the inescapable truth of it landed on me in a way that reminded me of the gulf between what it is to know something intellectually and accepting it emotionally. What I was now forced to accept was this: We'd collectively crossed a threshold, somewhere in the early days of the COVID lockdown. We'd had other things on our mind, more pressing claims on our attention, and we'd barely noticed that the system of connections that bound the world together throughout my entire adult life – that had quite literally allowed me to live that life in

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the way I did – had come undone, from the edges to the center. And we probably wouldn't be finding our way back to anything resembling wholeness. By the time the scale of the damage became clear, it was far too late to do anything about it.

Whatever your feelings about globalization, and mine are as ambivalent as those of anyone else attentive to its costs, it strikes me that whatever further unravellings of the world we may experience will be like that. In fact, Alison's reflections on what it felt like to pass through this new and unfamiliar Heathrow reminded me of nothing so much as my first experience of general anesthesia. It was like flicking a switch: even though I'd been told in detail what to expect, unconsciousness came on so swiftly, so suddenly and totally that I hadn't even realized it was happening until everything was all over; by the time awareness returned, I was on the other side. But then, many of the more significant ruptures bearing down on us will share that quality: we won't see them coming in any of the ways that matter, no matter how comprehensively we'd prepared for them or how much knowledge of their effects we'd managed to assemble in the run up to them. By the time we even notice these processes are underway, they will have run to completion. We'll just wake up one morning to realize that we no longer live in a world in which we have municipal garbage collection, or Amazon, or indeed an internet connection at all, because the circumstances that made them possible have ceased to obtain. And if there's anything at all we know about the kind of complex and tightly-coupled systems on which the continuity of our civilization is predicated, that in some meaningful sense constitute that civilization, it's that it is far, far easier to maintain them than it is to restore them once undone. The airport may reopen, in other words, but to what end if the airlines have collapsed financially, the pilots have been fired, the aircraft mothballed and the pushback tractors surrendered to the encroaching rust? Call all the king's horses and all the king's men, see if you can stitch the world back together again.

I do not mean to suggest that Hardinian selfishness and left-accelerationist ambition furnish us between them with a comprehensive catalogue of responses to the recognition of this truth, or anything remotely close to one. But for me they are exemplary of two deeper tendencies: on the one hand the perennial instinct to disguise our all-too-human panic and greed, prettying them up with claims to philosophy, and on the other the dream cherished by system builders

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that they might tame the outer darkness with sprawling architectures of control. And it's clear that neither one of these is capable of offering us a useful guide to life in the years of maximum turbulence. Philosophy will not acquit its wielder of smallness and ugliness – not even the real deal, let alone Garrett Hardin's sad pastiche thereof. As for left accelerationism's "Promethean politics of maximal mastery over society and its environment" (Williams and Srnicek 2014, 360), well, it seems to me that if there's anything we've clearly had quite entirely enough of over the past hundred and fifty years, it's would-be Prometheans and their claims to mastery. A little humility is surely in order. What is left for us to work with, however humble and dowdy and insufficient they may be, are the tools and tactics to which we have permanent recourse, and the imperative to make with them such shelter as we can, for as many as we can, for as long as we can.

There is an alternative, of course. Some will no doubt retreat into the comforts of a stance I think of as blackened quietism: fully accepting the true scale of the horror that has befallen us, while abandoning any pretense that one's own actions might mitigate it in any way, even when measured in degrees of harm reduction or palliative care. Blackened quietism is the pursuit of equanimity, contemplative stillness, and ultimately acceptance when faced with the end of all hopes. It would be easy to characterize this as a defensive crouch in the face of overwhelming suffering, a surrender to defeatism, even an indulgence in a luxury others do not have and an insult to those who have borne up under still worse conditions. I don't think it is any of those things. I happen to think it's a perfectly valid response to a world hellbent on concretizing the Buddhist truth that existence is suffering.

But it wouldn't be satisfying for me personally, and I'm willing to bet I'm not alone in this.

§ on f/utility, or: sleep has his house

There are relatively few things I have ever taken to heart from the Jewish ethical tradition which is my birthright. Among them, though, are a few lines attributed to a rabbi named Tarfon who lived around the end of the first century of the current era, later bound into the compilation of oral wisdom known as the Pirkei Avot. "It is not incumbent upon you to complete the work [of repairing the world]," Tarfon insists, "but neither are you at liberty to desist from it". I have always found

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Tarfon's charge electrifying, possibly because it is both bracing and comforting,[10] and I continue to turn to it for strength in difficult moments just as I do my old drill sergeant's mantra. In context, I interpret it to mean that we keep organizing, even when what we're doing, far from keeping entropy at bay, amounts to little more than shifting drifts and piles of washed-up flotsam around the terminal beach.

That word "entropy," though. It can be very tempting to understand politics in thermodynamic terms. We know that the directionality of the universe as a whole is toward disorder, and that while it is always possible to create local bubbles of order, there is a dissipative cost to this work that sheds a still greater increment of disorder, permanently and irrevocably, on that remaining outside the bubble.[11]

This is the law of the universe, and therefore the final horizon for any politics of the left. Right formations are always happy to create local order for a few by stealing it from an outside literally defined as an "externality" not worth accounting for. But this is not a strategy available to any tradition wishing to live up to its nominal commitments to liberation and equity.

In our time the chaos we have to contend with and somehow manage has become general, a tide of entropy loosed upon the world. But chaos falls earlier and more heavily on some. And central to Tarfon's charge, for those of us who enjoy relative privilege, is that we use it to balance the load. For that is the meaning of privilege: a shelter, however partial and temporary, from some of the forms of exigency to which bare life is otherwise exposed. The point of becoming-resourceful isn't, or isn't just, to secure our own survival. It is to survive so we are able to shade and nurture others and tend to them with care, amid the heat and dust and filthy trickle that reaches us from the former municipal water supply, in the face of a governing

10 Try to think of another single-sentence ethical maxim that does that, from any wisdom tradition. It's a neat trick. (You may be familiar with the Benedictine monk David Steindl-Rast's gloss of Tarfon, which circulates widely, if generally without attribution, as one of those Instagrammable inspo-quotes. Entirely apropos to our considerations here, it begins by commanding that we "not be daunted by the enormity of the world's grief.")

11 For some reason I always think, in this regard, of the splendid headquarters of the VOC, the famed Dutch East India Company, in the docklands of Amsterdam, every last tick of its grandeur having been purchased at the cost of misery in the charred fields of West Java.

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universal indifference to the narrow bounds within which life can be sustained.

And so we turn to the planting of trees. Consider, for a moment, what is involved in doing so in an entirely literal sense. It may appear to be the simplest of tasks, yet to plant trees in any number means drawing upon all the skills that bind us together as a human community: determining a need, devising a plan to fulfill it and cooperating on the execution of that plan. To do so with any prospect of success, further, requires that we invoke millennia of accumulated knowledge regarding which species are likely to prosper on a given terrain, what they require by way of commensals and companion plantings, and so forth. The result of that collective work and that recruitment of knowledge is nothing less than an expansion of life's domain, an extension of the broader network of being that has made shelter on this planet since prokaryotic microbes first appeared on it four billion years ago. (Indeed, strictly speaking, the intervention even transcends the boundaries that distinguish organic life from its environment: if you're intent on decarbonizing the atmosphere, there are few better or more practical things you could do than planting as many trees as possible.) One could certainly understand this planting as an act of agriculture, and therefore as a step toward reinforcing the long dominion of agriculture and its downstream implications over human consciousness. That is surely its readiest and most obvious interpretation. But it is also possible to see rooting a sapling in the Earth as an act of liberation, helping the seed live out its destiny as a full-grown organism in its own right, an environment in itself, a participant in a still broader ecosystem and a multiplication of possibilities where before there had been none. And not for any instrumental reasons of your own, but rather from a sense of service to others you'll never live to meet, or even the humility involved in accepting yourself as simply a seed's way of making another seed. As my friend David Madden observes (Madden 2020), this would be akin to an act of faith: a gesture toward a time yet to come, even when you know full well there is no future you or your survivors will inhabit or give name to.[12]

12 An engaging popular account of the sociality and communicative richness of trees can be found in a book Madden and I often joke should have been named Arboreal Communism, Peter Wohlleben's *The Hidden Life of Trees* (Wohlleben 2017).

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Is this futile? Quite possibly so. But then, futility is a curious thing, in that it is precisely not in the eye of the beholder; only the one who undertakes an act and experiences its consequences for themselves is in a position to judge whether or not it was pointless.

And for the depressive, anyway, the real question isn't primarily one of pointlessness, but of not knowing quite how to name the feeling one experiences when a darkening reality finally corresponds with one's perceptions of it, like one of those tests where the outlined circles projected onto your field of vision come into alignment. This feeling is nothing so untoward as satisfaction at the delamination of all things, but it definitely involves a certain relief, or even release. Thus, perhaps, the strangely affirmative character of this *savoir vivre* of life at the end of all human things, a life pursued in the negation of hope and the acceptance of doom. Indeed, this darkened landscape is lit by a flickering suspicion that, for those of us damaged by our long and harried passage through a world in which we never felt quite safe enough to drop our defenses, it is only such an acceptance that opens up the space in which qualities like equanimity, compassion and generosity might finally appear. And it is here in the ruin and wreckage, where such qualities might seem to tell the least, that is precisely where they matter most.

TRANSMISSION ENDS

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The title of this [contribution] is adapted from the Islamic hadith Musnad Ahmad 12491: "If the Hour were established upon one of you while he has in his hand a palm shoot, then let him plant it."

This [contribution] was written to the sounds of Aluk Todolo, Barn Owl, Bismuth, The Clara Ward Singers, Ex Eye, Hildur Guðnadóttir, The Haxan Cloak, James Cleveland and the Angelic Choir, Krallice, KTL, Lingua Ignota, MMMD, Panopticon, RAKTA, Emma Ruth Rundle, Ben Salisbury, Sleep, Songs: Ohia, The Staple Singers, SubRosa, Taman Shud, Thou, Wolves in the Throne Room, Wrekmeister Harmonies, Year of No Light, and Charles Bradley's cover of Black Sabbath's "Changes." When in Helsinki, Adam Greenfield enjoys Kulttuurisauna, Hakaniemenranta 17. Support your local independent bookshop.

13 Editorial note: This text first appeared as a booklet or "pamphlet" (the term is here changed to "contribution"), published by Libreria, London, 2020.

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Building Collective Sovereignty

Common Knowledge

How might we define digital sovereignty? One definition comes from a paper by Luciano Floridi (2020, 370), Professor of Philosophy and Ethics of Information and Director of the Digital Ethics Lab at the University of Oxford. After surveying four examples of issues concerning digital sovereignty, Floridi writes:

> [T]he common thread that unites them is getting clear: these are all episodes in the fight for *digital sovereignty*, that is, for the control of data, software (e.g. AI), standards and protocols (e.g. 5G, domain names), processes (e.g. cloud computing), hardware (e.g. mobile phones), services (e.g. social media, e-commerce), and infrastructures (e.g. cables, satellites, smart cities), in short, for the control of the digital. Let me clarify that by "control" I mean here the ability to influence something (e.g. its occurrence, creation, or destruction) and its dynamics (e.g. its behaviour, development, operations, interactions), including the ability to check and correct for any deviation from such influence. In this sense, control comes in degrees and above all can be both pooled and transferred.

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Traditionally, the concept of sovereignty has been associated with a state or a monarch. Digital sovereignty is often framed in relation to the individual user controlling their own data, rather than corporations. Relatively little attention has been given to the sovereignty of collectives under their own democratic governance.

Our work at Common Knowledge is primarily concerned with building digital sovereignty on a collective level, by creating digital technology that supports, amplifies and extends the work of grassroots activists, community groups and unions. We work in direct collaboration with these organizations to understand their needs and help them achieve their political goals. This work falls into three core activities: we design and build digital software, provide training and strategic advice, and facilitate the sharing of knowledge and resources amongst different groups.

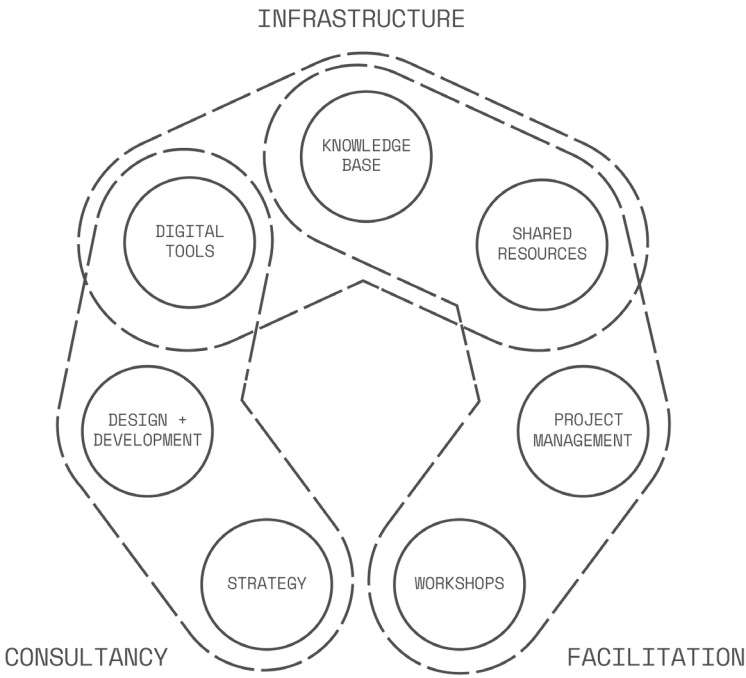

Fig. 1

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There are a number of existing digital tools specifically geared towards political organizing. However, these tools are usually intended for electoral campaigning or lobbying, and often enable top-down communication rather than distributed and horizontal structures. We founded Common Knowledge because we saw an opportunity to leverage the power and ubiquity of digital technology to enable bottom-up organizing. We want to use digital technology to reduce the barriers to direct political participation, enabling people to build relationships, organize themselves and directly address problems in their own lives and communities.

We've worked with organizations that represent a range of different scales, methodologies and political concerns. These include precarious workers (United Voices of the World), renters (London Renters Union, Generation Rent) and healthcare workers (Nurses United). We've also worked with organizations who are focused on uniting progressive groups behind shared demands and strategies (Claim the Future, Progressive International) and facilitating radical political education at scale (The World Transformed).

Through this work, we have come across a number of tensions and complexities in the way in which we approach digital sovereignty. In this piece, we begin by outlining our own organizational structure as a worker cooperative, how that influences the work we do and how it relates to collective sovereignty. We then examine two case studies – London Renters Union and United Voices of the World – as a means of reflecting, from a practical standpoint, on digital sovereignty. We end by reflecting on what these considerations might tell us about building collective sovereignty in times of crisis.

How we work

Common Knowledge is a not-for-profit worker cooperative. This means that each of our five members has equal control and ownership of the collective. We make decisions and govern the cooperative in a democratic, non-hierarchical and collaborative way. We support each other and contribute our own particular skills and experience for our mutual benefit and for the cooperative as a whole. Any surplus we generate through consultancy work is invested into either developing the cooperative or doing solidarity work for unfunded groups.

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Being part of a worker cooperative is about exercising sovereignty over one's labor and time. We formed Common Knowledge as a worker cooperative because we think that how we work, support ourselves and collaborate with each other hugely impacts what we make. If our goal is to enable radical change, we need to begin by questioning the entire structure of our work. We see worker cooperatives as one way of prefiguring an alternative future, in which solidarity, interdependence and self-determination is at the center.

We use two practical frameworks to help us collaborate in a non-hierarchical way. The first of these is sociocracy. The goal of sociocracy is to optimize organization efficiency, while ensuring that everyone's voice is heard. One crucial aspect of this is that decisions are made by consent, not consensus. Any member can propose something to the rest of the group. Other members can ask for clarifications or amendments to the proposal. From there, they can decide to either give their consent or block the proposal. The criteria for consenting to a proposal is that it's "good enough for now and safe enough to try." This method recognizes that most decisions aren't permanent, and optimizes for efficiency and iteration over consensus.

This form of decision-making is about trusting the people you work with to make decisions that impact the collective as a whole. It removes the expectation that everyone must be deeply involved in, and supportive of, every decision that needs to be made. Although an individual member may give up a little of their personal agency, overall it increases the collective's ability to act, learn and grow rapidly.

The second framework is called Scrum, which is ubiquitous in the world of software development. Scrum prioritizes horizontal collaboration and iteration over formal processes and structures. However, in most tech companies, this distributed and adaptive method of working takes place within a more rigid and hierarchical organization.

Following this framework means working in sprints: two-week cycles of focused activity, with a number of rituals throughout. These include a planning session at the start, weekly backlog refinements, and a showcase and retrospective at the end. These events ensure that everyone on the team understands to work to be done, and can easily share work between each other. They also enable the team to work in an iterative way, adjusting their behavior as they go. The retrospective at the end allows the team to reflect on the successes and challenges of the sprint, so that they can improve in the next one.

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Rituals like these are an important part of both sociocracy and Scrum. They provide a regular cadence for the team to follow, and allow for continuous reflection, iteration and renewal. They both provide a solid basis for building highly collaborative and non-hierarchical environments.

Another key part of our work is looking for ways where we can contribute to the wider ecosystem, from political organizing to open-source software engineering to the cooperative movement. For example, we release any custom software we create under an open-source license, so that it can be reused in future projects and by others as well. Wherever possible, we always prefer building upon and customizing open-source tools if they already exist, rather than starting from scratch with every project. Contributing to an existing project means we can achieve more impact, more quickly, and that our work will benefit others beyond our direct collaborators.

We look for patterns and needs that are shared by the different groups we work with. Our goal is to generalize the software we make and identify opportunities where it could be reused and extended. We hope that, in doing so, we will be able to increase the collective capacity of the movement as a whole, using digital technology to encourage and amplify effective organizing tactics.

We see cooperatives, community groups and unions as different but interconnected strands of worker cooperation. All are concerned with building working class power and sovereignty. They are self-directed, democratic organizations that can decide their own direction and are not answerable to any outside authority. They focus on building agency by addressing problems on a collective level, rather than an individual one.

Case studies

London Renters Union

The first project we're going to look at is a collaboration with London Renters Union (LRU), a members-led organization that campaigns to ensure all Londoners have a decent, secure and affordable place to call home. This project illustrates an essential tension when it comes to approaching digital sovereignty in the context of distributed groups: Is it better to use existing proprietary software that members

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and organizers already use, or to build something custom that can be entirely owned and controlled by the organization?

In May 2020 LRU launched their Can't Pay Won't Pay campaign, which focused on bringing renters together to support each other and build power during the pandemic. We worked with them to build two iterations of a custom website to support this campaign.

The website had three functions:

1. Collect information on people's rental situation, in order to provide them with the most relevant support and advice. This information was also used by LRU to understand where they were most needed, look for patterns, and lobby the government.

2. Encourage renters to show their support for the campaign by pledging to withhold their rent and resist illegal evictions.

3. Direct people towards joining the union and attending renter solidarity meetings.

We began the project by running a workshop with a number of member-organizers. In this workshop, we discussed their theory of change and identified where our work fitted within this. The goal of the campaign was to enable organizing, rather than mobilizing. LRU's strategy for building power is to decentralize leadership and facilitate members to become organizers, rather than just encouraging people to sign a petition or share the campaign on social media.

Surveying London Renters Union's current technical stack, we made a number of technical choices to maximize their digital sovereignty. In this case, sovereignty was expressed as their ability to modify their website and adapt it to the changing needs of their campaign. User customization always adds an additional layer of complexity when coding and designing. However, we knew that the pace of the campaign would require rapid and last-minute changes, so we optimized for this in our technical choices.

Like many political groups, London Renters Union use the open-source content management system WordPress to run their website. They were also using a WordPress plugin called Gravity Forms, which allows forms to be created with a drag and drop interface.

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Working within this existing technical stack, we set up the campaign website on their own servers, in a way that was usable across the organization. We also configured it to allow for a high level of user customization. Given the sensitivity of the project, and the possible opposition to it by landlords and others, we also created a threat model and reinforced the security and robustness of their existing WordPress setup.

Working in sprints, we first launched a lightweight version of the campaign site and observed how people used it before designing and building a second iteration with more features. The first page of this site featured a heatmap overlaid with personal stories from renters around London.

From there, renters could fill out a step-by-step form to specify whether they were at urgent risk of being evicted, needed support with rent debt or wanted to act in solidarity with other renters by helping resist evictions. Those who indicated they needed assistance were asked for details about their rental situation: what type of tenancy they had, how much rent they paid, and what housing issues they were facing.

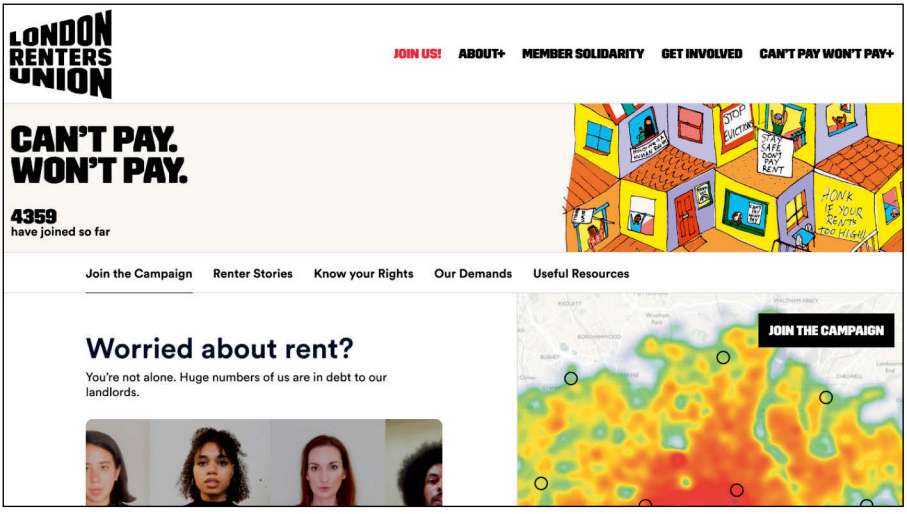

Fig. 2

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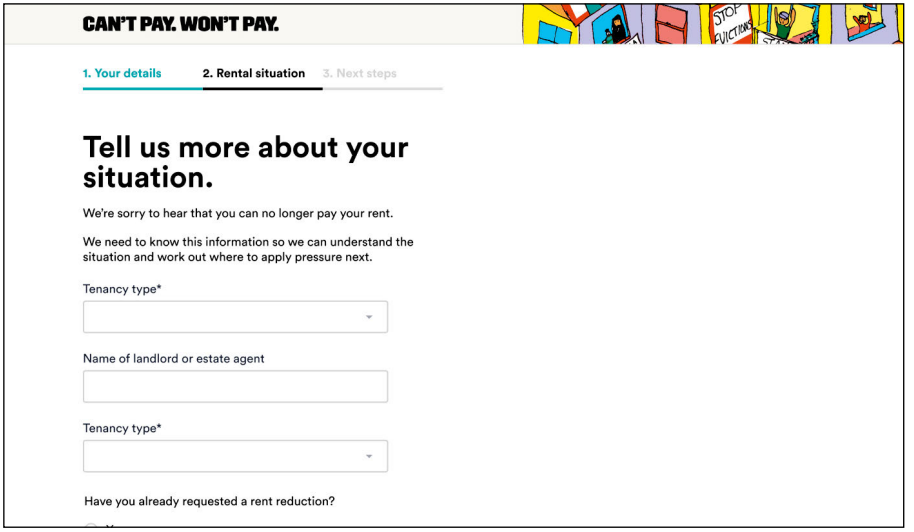

Fig. 3

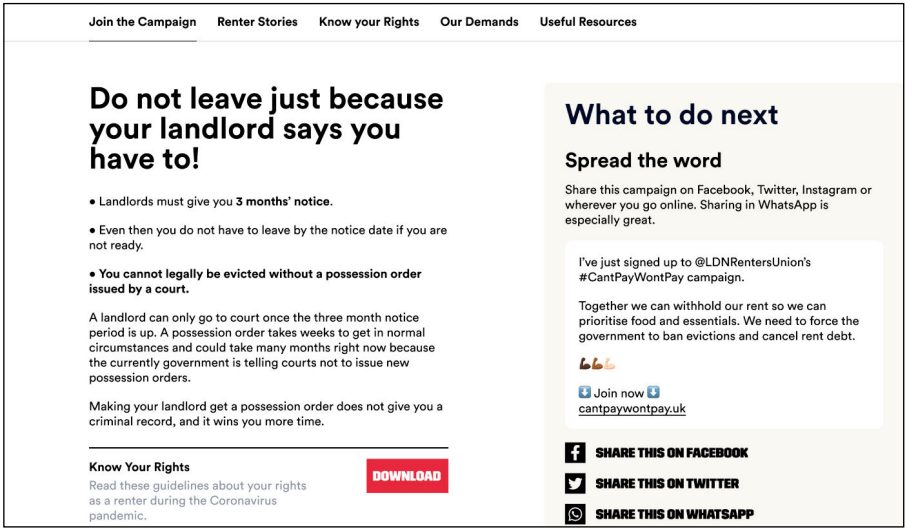

Fig. 4

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Based on these answers, the final page displayed a summary of the most important information they needed to know, and a link to a more extensive "Know your Rights" guide, translated into 19 languages. It also directed people towards joining the union and attending upcoming organizing meetings.

So, how did this project increase London Renters Union's digital sovereignty?

The technical choices we made gave London Renters Union a lot of power and flexibility during their campaign. We used tools they were already familiar with, therefore lowering the barrier of entry. Organizers could use the information they collected to adjust the campaign very rapidly. They could adapt any element of the form, update copy and even change the flow of the form, moving elements of it from one page to another. Crucially, by using Gravity Forms, they didn't need to wait for a software engineer in order to make adjustments – they could simply make the changes themselves.

Once information had been entered into Gravity Forms, it was written to two other digital products that LRU were already using to organize and mobilize their members: Airtable and Mailchimp. Airtable was used as a database, which the union could configure, analyze and share with its various local branches. Mailchimp was used to directly email those who had joined the campaign. These three systems were connected by Zapier, automation software that allows to connect different apps and automate workflows.

Their improved digital security also meant they had to rely less upon third party systems. They could trust the integrity of their data and the ability of their website to push forward the campaign at scale. However, this setup remained dependent on Airtable, Zapier and Mailchimp. All of these are proprietary tools that become more costly the more they are used. Arguably, the union's dependence on these tools impedes their true digital sovereignty. However, their reasons for using Airtable in the first place give us insight into why a compromise like this is sometimes necessary.

At its most basic level, Airtable is a database. It stores data in a column and row format and allows this data to be queried. In theory, this could be replaced by any of the commonly used open-source databases, like MySQL or Postgres. However, writing to a database like MySQL requires time and a level of technical expertise that makes it inaccessible to most of London Renters Union's organizers. As a

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member-led organization, anyone can become actively involved in organizing the union. Therefore, they need tools that are accessible for any level of technical expertise. Airtable allows the union to distribute data to local organizers in a convenient and flexible way, without the need for extensive training or specialist expertise.

On one level, using Airtable as part of this technical stack reduces the union's sovereignty and subordinates them to the whims of a Silicon Valley company. On another, using a tool like this has given them more agency and increased their operating capacity. Organizers can view and share the data in different ways, modify it more easily and facilitate their activity more clearly.

This tension reveals a problem with the discourse around digital sovereignty. If the ability to act is a core element of sovereignty, then the barrier to entry for many open-source alternatives to commercial tools may actually reduce sovereignty in the short term.

United Voices of the World

Let's consider digital sovereignty from another angle, by examining the work we've done in collaboration with the grassroots trade union United Voices of the World (UVW). This case study demonstrates more of the complexities of digital sovereignty. Better digital systems, particularly ones that can be customized and configured towards very specific use-cases, bring a lot of value by helping an organization save time, improve working processes and increase collaboration between teams. However, custom technology also requires a substantial investment of time: not only to design and build but also to learn and maintain.

UVW helps migrant and precarious workers to organize. The bulk of their membership are cleaning and security staff, with newer branches that have been set up in the last year to support a broader range of sectors, including legal workers, designers and cultural workers, architects, strippers and sex workers. In comparison to mainstream trade unions, UVW is highly active and effective. Whereas mainstream unions might protect their members, they don't do so with the same speed, aggression and power as UVW is known for. As a result, UVW have won victories for their membership with a surprising frequency – they punch above their weight.

As with most activist organizations, much of UVW's work is reliant upon proprietary digital technology. For example, communication

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between union staff, organizers and members was via WhatsApp, the messaging platform owned by Facebook. Internal communication amongst UVW staff also defaulted to this platform. The use of WhatsApp in this manner is extremely common in UK-based activist groups. Most organizers don't like having to use WhatsApp in this way: The constant stream of messages means that important messages get lost amongst the noise, and it stops them from maintaining their work-life balance.

Using WhatsApp as their main communications infrastructure also means the union is beholden to Facebook. No one pays for WhatsApp, no one can influence its direction of travel, and no one can make claims against it. If Facebook decided tomorrow that organizing trade union activity through WhatsApp was no longer permissible, the union would be considerably impeded on an operational level. However, WhatsApp is often seen as a necessary communication tool due to its ubiquity – it's very difficult to convince new members to download, learn and use a new tool just to be able to interact with an organization.

In terms of their systems for managing their membership, prior to this year they were disjointed and ad hoc. Members joined via a form on their website, which was output into multiple Google spreadsheets. Staff and volunteers would manually clean up this membership data and import into their Mailchimp database. The most reliable source of truth for the union's active member list was their payment system, GoCardless. One staff member was responsible for checking GoCardless for lapsed payments on a weekly basis, and then directly reaching out to those people to confirm their membership.

Although the union owned and controlled the data on its own membership list, it was mostly dependent upon third party platforms. This dependence was not absolute: It was still possible to export their data from any of these platforms into a standard format and migrate it elsewhere. However, this system was not actually usable by any of the union members themselves. Only one or two organizers were able to access this data. The data was also incomplete, out of date and incoherent. People didn't know what changes they wanted, other than a solution to their problems, but a lack of time to think and inexperience in data management prevented them from making substantial changes themselves. So, while in theory UVW had sovereignty over their data, in practice their sovereignty was very limited.

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Knowing if a member is active is a particularly crucial detail for the casework team, who support members to deal with their problems at work. The union only offers legal support to active members who have joined more than a month prior to needing support. This requirement is partially due to the resources and time required to bring a case to the employment tribunal, which should be seen as a last resort to resolve a workplace issue. It is also because casework is often about solving an individual concern. While supporting members in this way is important, the real power of a union is through collective action.

UVW identified that this casework system was in most dire need of improvement, so this is where we focused most of our attention and time. However, before improving their casework system, UVW needed to have a definitive membership list that they could easily manage. For this, we introduced them to an organizing platform called Zetkin.

Zetkin was originally built by the Malmö branch of the Swedish Left Party (*Vänsterpartiet*) to meet their own organizing needs, but has since been expanded and generalized so it can be used by any progressive political organization. It provides a suite of tools for organizing large membership groups digitally, from carving up membership lists into local groups, to phone-banking members and conducting surveys. In collaboration with the developers at Zetkin, we helped onboard UVW to this new system. Much of this time was spent cleaning up and migrating their data to the new platform.

Once this migration work was underway, we moved our attention to the casework system. We started this process by interviewing a range of caseworkers, organizers and staff. We used what we learned during these interviews to map out the casework process and identified which parts of it weren't functioning. One of the key findings during this research process was that the most successful cases were the ones where organizers and caseworkers worked in collaboration, reinforcing their campaigns and strikes with strategic legal cases. In one particular case, UVW were able to not just win wage parity for their members through successful strike action, but they also achieved structural change on a UK-wide level by challenging the legal definition of an outsourced worker.

However, many caseworkers we spoke to reported that they were overwhelmed by their workload. We discovered that each caseworker

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had their own system for managing their cases. Sometimes, key evidence for a case was saved on a caseworker's local machine. This meant that no one had oversight to what others in their team were working on and that work was often unevenly distributed. These existing systems were needlessly time-consuming and difficult to use as a team. We saw an opportunity to use the affordances of digital technology to not only improve the day-to-day experience of union staff but also to build the power of the union as a whole, by helping them reclaim the time and headspace to look for broader patterns and opportunities for collective action.

We decided that the most efficient way to meet UVW's casework needs was by repurposing an existing ticket management system. After some research we found Zammad, which seemed to fulfil many UVW's requirements. Crucially, Zammad is also open source. This meant that any requirements that it did not already meet could be added to by us, as we had access to the source code and the relevant expertise.

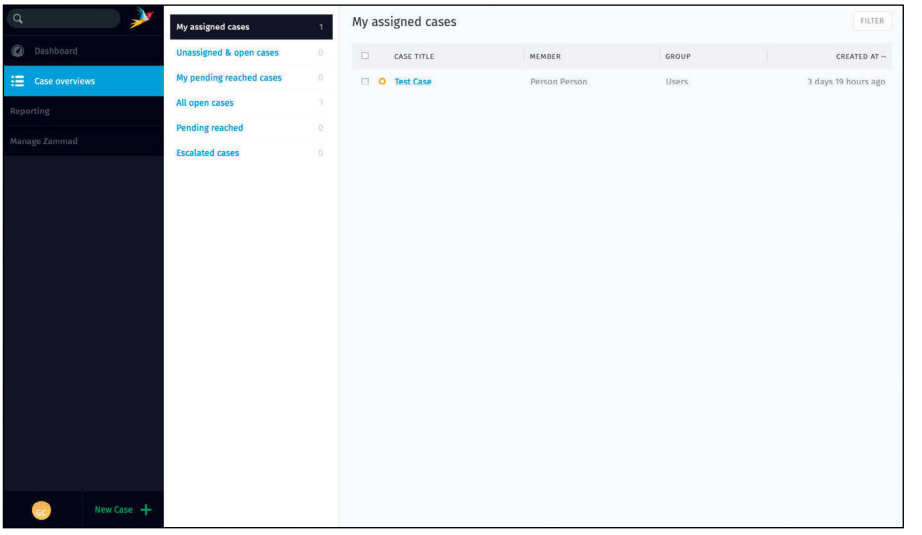

Fig. 5

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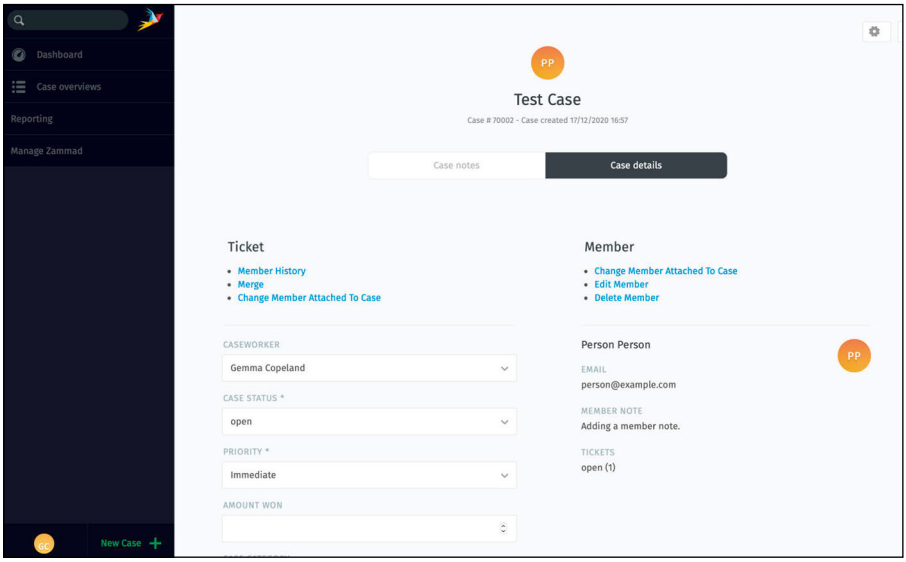

Fig. 6

Zammad allows for low-friction recording of communication history between UVW staff and members, including communication conducted by email, message or WhatsApp. Every case, including communication history, evidence documents and deadlines, are visible to everyone on the casework team, making it easier for them to distribute workload, look for patterns between cases and see upcoming deadlines.

We set up a self-hosted instance of Zammad and configured it to better suit the context casework. We built custom software to integrate Zammad with the rest of UVW's digital infrastructure, similar to how LRU uses Zapier to connect their various databases. This meant that caseworkers could search directly in Zammad to find members, their payment history and other relevant details. It also meant that new cases submitted via the website or to caseworker emails would show up in Zammad.

We onboarded the caseworkers to the new system, trained them how to use it and customized it based on their feedback. These customizations included changing the language and fields to be more appropriate for union casework, and simplifying the interface to make it easier for them to use.

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Through this process, UVW have moved from an almost unusable digital set-up to a system where their data has better quality and is more accessible and more useful to them. They are now in a position where they have significant power over their digital systems: They can have almost any custom feature added, thanks to the close collaborative relationship between UVW, Zetkin and ourselves.

However, this collaboration is only possible due to substantial investments from both organizations and from external funding bodies. Zetkin is accessible to UVW in a way that Airtable or Google are not, due to their small size and political alignment with progressive organizations. Like us, they choose to invest any surplus time towards benefiting the wider movement, rather than generating profits. Our own ability to do this work came from a lengthy funding bid with substantial reporting requirements. Achieving digital sovereignty is a costly affair.

We also encountered some difficulties in onboarding casework staff to the new system. While most could see the benefits of using a tool like Zammad, it was difficult for them to invest the time required to learn this new tool and adjust their mental model and processes. This demonstrates that digital sovereignty takes work. It takes substantial time and effort to onboard and train people; it's not simply a matter of creating software and expecting it to be used.

While Zammad is an open-source tool that UVW will be able to adapt their casework system to their changing needs over time, this will still require external expertise, which means they don't have complete control of their digital infrastructure. While custom digital tools do increase sovereignty in one sense, they also require expert maintenance, attention and repair. This means that building digital capacity within organizations, or building strong relationships between technical experts and grassroots organizations, is an integral component of digital sovereignty.

Ultimately, much of the question of sovereignty comes down to time: the time required for maintaining ad hoc, manual systems compared to the time needed for UVW staff to learn a new tool; the limitations of our own time in each project we work on, and the technical decisions we make to optimize this time.

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In addition, despite all this work, UVW are still largely dependent on two global corporations for much of their day-to-day operations: Microsoft and Facebook. We could still plausibly build new digital infrastructure that is not reliant on either. But is this a worthwhile use of our time, compared to other matters? At some point, UVW will remain entangled with systems that restrict their degree of digital sovereignty.

Conclusions (or, more questions)

What do these case studies tell us about the practice of digital sovereignty? It is certainly a complicated picture.

For London Renters Union, while our interventions increased their autonomy on one level, they are still enmeshed with Silicon Valley corporations. For United Voices of the World, they now have custom digital infrastructure, but are slow to adopt this and still reliant on experts to adapt it in future.

Neither organization had complete digital sovereignty as its goal, although they certainly wouldn't be opposed to the idea in principle. In both cases, we could have insisted on enabling their complete control over their digital infrastructure. We could have advised that LRU migrate from Airtable to an open-source database. We could have recommended that UVW use a self-hosted mail server instead of Microsoft, and move all of their communications from WhatsApp to a decentralized chat platform.

However, would this have enabled the effectiveness of either group in achieving their political aims? And where do we stop insisting on sovereignty? Should we own the physical infrastructure on which the servers reside? Should the source code itself be developed with no dependencies that would be outside the control of the organization?

On the other hand, we could have chosen to ignore the digital sovereignty of each organization entirely. Assuming money were no object, we could have bought each organization the best proprietary software available. However, even the most useful commercial tools are not intended to facilitate the political aims of grassroots unions. Moreover, these tools are not designed to be adapted. They are designed to provide a service to their user base and in doing so generate profits for the corporation that has built them. They do not

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optimize for the sovereignty of their users, because vendor lock-in is their business model.

To us, it seems that "just enough" digital sovereignty is what the goal should be. Digital sovereignty consumes time and energy because, in order for it to be effective, sovereignty must be materialized in software. This software does not yet exist, primarily because it is not in the interests of those that create software to build it. While we can never compete with Silicon Valley companies in terms of financial resources, the most likely path to building software that the left owns and controls itself is through cooperation with other actors across a variety of fields.

With each project, we need to be pragmatic and consider the different ways that we might be able to build greater collective sovereignty. Should we spend our time building custom software that is completely secure and decentralized? Or should we spend our time training organizers how to repurpose and get the most out of their existing, off-the-shelf tools?

We don't think that there is a simple answer to any of these questions. They are dependent on political priorities, strategy and context. However, we think that the only way to achieve sovereignty, digital or otherwise, is to build it on a collective level. Above all else, this means collaborating with others, through social formations like grassroots unions, community organizations and cooperatives.

Digital technology has the potential to be used to increase the collective sovereignty of these groups, but only if we understand it as one piece of the puzzle. The COVID-19 pandemic has meant that many activist groups have become even more reliant on digital technology to fulfil their political goals, a trend which is only going to continue. Good organizing techniques are traditionally based on face-to-face contact: going to where the people are, forming relationships and building trust, and through this process, building power. As organizing moves more online, it's crucial that we understand and treat organizing digital spaces in the same way as in physical ones.

Digital technology must be seen as an enabler and multiplier of collective action and organizing techniques, not a replacement. It must be created by working directly with organizers, considering the broader social, political and cultural context of each project, and allowing ample time for support, training and maintenance along the way.

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Sovereign Imaginaries

How Corporate Digital Imaginaries are endangering our Political Practices

Paola Pierri

Corporate digital sovereignty as a *"coup des gens"*

Debates on digital sovereignty go straight to the question of what democracy means in the digital age, as they are traditionally concerned with the fundamental relationship between the state itself and the different subjects that live in that state.

This chapter aims to explore the question of digital sovereignty by reflecting on its ambivalent character, as current technological and political ways of intending and practicing sovereignty can be understood in fact either as limiting or as expanding democracy and the democratic rights.

While the question of digital sovereignty is usually analyzed through the struggle over control of the digital space between states and corporations (and also among states or among corporations[1]), I propose in this chapter to bring forward the question of sovereignty focusing on the relationship between corporations and *individuals* (or better, the collective subject). The reasons for doing so are several.

1 We have seen examples of these struggles over the exercize of sovereignty many times. To mention only the most recent ones from this summer 2020, we could remember the failure of the British Government to develop a centralized Corona App without using the API from Google and Apple; or the still open legal battle over the use of TikTok in the US.

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First, in modern western democracies all forms of sovereignty are understood as taking their legitimacy from popular sovereignty (which can be described as the individual sovereignty that becomes socialized in a political and collective subject). Second, I believe the question of digital sovereignty is a question that should be addressed by each and every one of us, because as Luciano Floridi puts it, the consequences of the fight over digital sovereignty will affect us all, "even those who do not have a mobile phone or have never used an online service" (Floridi 2020, 369). Third, as I will try to make evident in this chapter, I consider the struggle over the concept of sovereignty on the individual level to have an incredible and symbolic impact. This is because it is at the individual level (through the dissemination of the myth of the "all-powerful" individual) that the fight over sovereignty between corporations and states is developed. By forging this image of the all-powerful digital citizen, corporations are in fact undermining the state sovereignty from the bottom-up, through the image of technology as a tool for liberation that gives control to its users. If popular sovereignty is historically where the legitimation for the democratic state lies, then in order to understand how digital sovereignty is being reshaped we need to start from "the people." I share on this Shoshana Zuboff's analysis that the corporate takeover of our economies and lives in the digital sphere is not a *coup d'état* but a *coup des gens*. In her own words: "It is a form of tyranny that feed on people but is not of the people. In a surreal paradox, this coup is celebrated as 'personalization,' although it defies, ignores, overrides, and displaces everything about you and me that is personal" (Zuboff 2019, 513). In this chapter I would argue that it is by building the image of the all-powerful digital user (and citizen) that many digital corporations claim to take their legitimacy and their sovereign power.

On the following pages, I will explore first what it means to pose the concept of *sovereignty* as a social and political imaginary and how this concept is used to exercise power in practice, what its roots are and what the implications. I will then reflect on how (and whether) digital sovereignty could be imagined differently within the digital society, by drawing on the field of social movement studies and digital activism. What has been happening in these fields in fact exemplifies the power of imaginaries in the digital age, and how they have been shaping the concept of activism and resistance as well. The chapter concludes

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with a reflection on why society needs to deal with these imaginaries first, in order to develop a critique and practice of resistance that are effective in the longer term in regaining our sovereign digital rights.

Sovereign imaginaries: building the legitimacy for digital sovereignty

Yaron Ezrahi in his book *Imagined Democracy* talks about the imaginary character of democracies by claiming that the main idea of self-government by the people is actually based on what he calls "fictive-performative foundations" (Ezrahi 2012, 3). Political imaginaries, he says, are fictions, metaphors and ideas that, once established, have the power to regulate our political behavior. Ezrahi is not alone in pointing towards the powerful role of imagination in shaping political structures and institutions. Benedict Anderson (1983) in his book *Imagined Communities* shares the same principle, where he famously states that the nation is nothing less than an imagined community, as we will never get to know in person our fellow citizens, but we are nevertheless linked to them through an act of imagination.[2]

According to Cornelius Castoriadis (2005 [1987]) imagination is *always* and *already* in power, in the sense that it is imagination which shapes our ways of understanding and seeing the social sphere, and that it is imagination that can make us shape the social otherwise. The power of the social imagination, Castoriadis continues is the most powerful but also the most dangerous of all forms of power, as it operates invisibly. Until it is contested, the power of the social imaginary would appear to us as completely self-evident. In other words, this "power is conspicuous by its absence" (Wolf 2013, 197). The project of a digital form of activism should aim at making this power present and visible instead.

The study of social imaginaries is a growing academic field (Adams et al. 2015) that enquires into how different symbols and meanings can historically shape the political instituting of different modes of society. As societies perform the task of trying to understand and picture themselves to themselves, they produce what have

2 According to the authors I will be referring to – and this is also the stance that I take on the topic –, imagination is not to be understood as the producing of visual images of something that might be unreal, as in "imaginary." The imagination to which these authors refer is rather a social activity that is politically creative and that shapes and motivates political action.

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been defined as social imaginaries, which are self-representations that become socialized and reified (Gilleard 2018; Lennon 2015; Gaonkar 2002). These imaginaries influence how individuals in a specific society behave, what they believe to be possible and what they dream of, as they have a normative and performative power. The right to be sovereign, for instance, was thought to be derived from gods, oracles, blood or vote at different points in history. Each of these imaginaries were at some point perceived as "true," and through them the sovereign could exercise his/her power. Once they lost the power, they were subsequently replaced by renovated ones.

When it comes to analyzing what Emiliano Treré has defined as *socio-technical* imaginaries, we need therefore to understand that these are not simply vague images that influence our perception and what we think. They are in fact very concrete social processes that operate as forms of "power-knowledge," through the use of media tools and digital technologies: "Imaginaries developed around technologies constitute one of the most important resources that different actors involved in the technical process mobilise at different stages and for different purposes" (Treré 2019, 110).

Following Treré, I therefore suggest in this chapter to frame socio-technical imaginaries as competing imaginaries that are built and that form our visions of what technology is, what the digital space is and what our concept of sovereignty is in that space. We have in fact to appreciate the following: i) that social imaginaries are not only the making of those in power but are built through much more complex and multi-actors processes; ii) that social imaginaries tend – once established – to create and maintain the order and perpetuate the status quo; iii) that social imaginaries – once their inherent mechanisms are better understood and appropriated by those not in power – could be not just the problem but also the cure. I propose in fact to consider social imaginaries as devices that can disempower people, as well as being the terrain where social struggles for democracy can happen. To the dominant imaginaries driven by corporations or mainstream media, for instance, citizens could respond by developing alternative imaginaries pushed forward through engaged parts of the civil society and social movements. In summary, as Kathleen Lennon reminds us, "[t]he task of revolutionary change and that of creating an alternative social order is not … that of dispensing with imaginaries, but of providing alternative ones" (Lennon 2015, 83).

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Trying to address and understand digital sovereignty through the concept of social and political imaginaries – as this chapter is doing – has the advantage of adding a symbolic level to the many analyses that have so far increasingly focused on the *materiality* of digital platforms (the resources and funding needed, the legal frameworks and the infrastructures). Without wanting to undermine the importance of the material conditions of digital sovereignty, a focus on the imaginaries reminds us that discourses and symbols are powerful too, and that perhaps they could provide another way (hopefully a fruitful one) to understand how digital corporations have acquired so much digital and sovereign power. Similarly to Christopher Kelty, I believe that using the conceptual tool of social imaginary is "particularly appropriate in this case because the practice of writing software is precariously situated between verbal argument and material practice ..." (Kelty 2005, 186). At the same time, we should also rethink the notion of the social imaginary in itself, as coding (together with speech, writing, images, etc.) becomes another language that adds to the symbolic level, and does this in a very peculiar way.

As Wendy Hui Kyong Chun reminds us, the word "codes," which historically are the laws that govern the social life and define, among other things, what it means to be sovereign, today is more likely to evoke the notion of computational codes of which the software is made rather than the code of law: "What is surprising is the fact that software is code, that code is – has been made to be – executable, and that this executability makes code not law but rather what every lawyer's dream of what law should be: automatically enabling and disabling certain actions and functioning at the level of everyday practice. Code as law is code as police" (Chun 2011, 101). In the age of digital societies, the computational code takes the role of the sovereign state, one that has absolute power – the sovereign that encompasses in one figure the legislative, executive and jurisdictional power.

To start unpacking what imaginaries are shaping the concept of digital sovereignty is therefore the task intended for this chapter. As many authors have argued (Floridi 2020; Couture and Toupin 2019; Ávila Pinto 2018; Chun 2011), the concept of sovereignty has been deeply re-shaped by the pervasive process of the digitalization of society, where new subjects, new immaterial (as well as material) resources, new codes have *de facto* emerged. Nevertheless, the basic

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principles of digital sovereignty do not profoundly differ from the historical ones: the principle of control, freedom (both "freedom from" and "freedom to") and legitimacy are in fact still valid. It is around these concepts that the new variant of corporate digital sovereignty has been affirmed. Interestingly, while in practice corporations take a vantage position on all of these principles, in theory they claim to do this for the people. Claims of technology giving back control to the user (citizen) are in fact widespread. Tech corporations have made their role in giving freedom to people in to a banner proposition to accomplish what they want through a seamless user-experience (through their platforms, online services, user-centered design) and simultaneously to defend their freedom from regulations and control from the state, which is depicted as the only and ultimate threat to our democracies (as it exerts total control, limits our liberties and sometimes violates human rights). My argument is that corporations do so in order to meet the third founding sovereignty principle – the one they will otherwise not meet and which is possibly the most important of all – that of legitimacy. By promoting, in theory, a narrative of the people as sovereign and liberated from state control, they, in practice, empty the concept of sovereignty of all that is meaningful and simply substitute one form of control with another more subtle and powerful one, leaving to the people very little in terms of rights and autonomy.[3] In this way, state sovereignty is undermined from below (from liberated people of the internet), while also superseded from above (from tech corporations).

The way in which the code works in the computational realm aims at making the subject to appear as the real sovereign instead, fostering the idea that the "all-powerful" user, producer, decider that shapes the technology (through its codes) around her and for her own benefit is each and every one of us (Chun 2011). Tech corporations build for themselves this role of the promoter of individual sovereignty, while building their own legitimacy. In the next section in more detail,

3 On the topic of human rights, Rikke Frank Jørgensen (2019) provided an interesting analysis, based on Google and Facebook official documents and staff interviews, which identified the three main narratives these corporations use to avoid taking responsibility: 1) Google and Facebook protect their users against Governments overreach: 2) The companies are depicted as collaborating and assisting law enforcement by removing illegal content; 3) Privacy equals user control.

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I argue that this sovereign subject is the opposite of the democratic subject (*the subject of*) as she only keeps the illusion of the sovereign power, but is in practice increasingly powerless (*subject to*).

"The Emperor has no clothes": what is the digital doing to our democracies

Once we start framing digital sovereignty through the lens of socio-technical imaginaries, we can start appreciating the importance of unveiling their power and how they are built. As Yaron Ezrahi reminds us, in fact, when this creative political power is "hidden from the public eye, its efficacy in presenting the imagined as real may significantly increase" (Ezrahi 2012, 51).

As we have seen, it is crucial for the corporate digital sovereignty to be seen as directly legitimated by the popular sovereignty, to justify the fact that the state is left outside of the equation, as there is no need for the state to interfere. As we have also seen, next to the enormous economic power built through a *de facto* monopolist economy – next to the ownership of all strategic digital infrastructures and the power of big data – next to the intellectual property of codes, software and algorithms that are purposively left opaque – a crucial part of the corporate digital sovereignty power is actually built on the symbolic level, through the incredible effort that goes into the formation of a new technocratic social imaginary. This imaginary (also defined as Californian Ideology[4]) is actually made of a complex mix of cybernetic culture, free market economics and counter-culture libertarianism that aims at spreading the idea that more free tech and less state control are ultimately needed.

I am going to refer to what is happening in the field of digital activism as a case study in order to exemplify and analyze the impact of sovereign socio-technical imaginaries on political practice of democratic participation. First, because it very well illustrates the democratic perils that a corporate version of the digital sovereignty can have, as our most basic democratic rights (the right to participate, dissent and protest)

4 This term was originally used by Richard Barbrook and Andy Cameron (1996, 45) and defined as a "loose alliance of writers, hackers, capitalists and artists from the West Coast of the USA have succeeded in defining a heterogeneous orthodoxy for the coming information age: the Californian Ideology."

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are affected by the digital affordances that these corporations have built into their platforms. Second, because moments of protest are what Chun would define as moments of *crises*, which are moments of intense present where immediate responses are needed and where the digital control systems can be seen as operating in a *state of exception* (Chun 2011). Finally, I advance this field of study as a crucial field to critically assess the competing visions about emerging technologies and their role on society. Following Treré, I propose in fact to consider that "the realm of digital activism is both a privileged space and a contested terrain where to detect the development and the refinement of utopian and dystopian media imaginaries, and where to appreciate the existence of competing imaginaries and practices between the powerful and the weak" (Treré 2019, 115).

Some of us will remember the time, at the onset of the diffusion of the internet, when many activists and scholars from social movements' studies welcomed the web as a space for liberation, as it was free, transcended national borders and allowed for a new mode of "many-to-many" communication. At that time, people talked about a sort of *ideological congruence* of the internet as a bottom-up medium, perceived to facilitate the dissemination and growth of certain groups and ideas, which were more liberal and progressive. This euphoria and optimism reached its peak with the so called "Twitter revolutions,"[5] considered by many to be the ultimate incarnation of that power and freedom that the internet could deploy. Since then, and as the use of social media platforms increased, it became visible that "'making the Web social' in reality means 'making sociality technical'. Sociality coded by technology renders people's activities formal, manageable, and manipulable, enabling platforms to engineer the sociality in people's everyday routines" (Van Dyjck 2013, 12). Pippa Norris' (2000) mobilization thesis[6] states that the internet (or better

5 As Chun interestingly noted, "a name that erase the specificity of local political issues in favour of an internet application […]" (Chun 2011, 93).

6 This thesis distinguishes between: 'cyber optimist, who highlight how due to the new information and communication technologies,' previously disengaged groups are being drawn into politics and enabled to take part; 'cyber pessimist,' who assumes that, in the best-case scenario, the internet has not changed existing patterns of political participation, and in the worst-case scenario it may actually have widen participatory gaps between advantaged and disadvantaged populations.

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digital) participation was a distinct type of participation that came with incredible potential, but also raised new modes of exclusion as well. The appearance of a Digital Activism Gap (Schradie 2019) perfectly illustrates the formation of a democratic divide between those who are able to use the internet for political aims and those who are not. People with lower income and education levels are in fact less likely to produce new political content (such as social media posts, memes, comments, etc.), but more often will be limited to share pre-produced and pre-formatted content, which tends to be characterized by more radical opinions or controversial facts.

Rethinking activism in the era of corporate digital sovereignty means therefore to adopt a critical approach to the myth of the internet's ideological congruence (exploring whether the internet might rather be ideologically *non*-congruent with progressive movements). It also means to critically investigate other established myths (or better imaginaries) that seem to be prevalent in the public domain: first, the de-materialzsation of organizational structures from digital activism, that end up ignoring (digital) labor and (digital) bureaucracy that go into activism on-line (Shradie 2019); second, the obsession with measurement that drives certain practices of computational politics – what Karpf (2017) has defined "analytic politics" – which determine for instance the fact that political events end up being algorithmically *curated* (Gillespie 2014). When this happens, the implications are numerous and beyond the activists' control, as when in 2014 the Facebook algorithm decided that the "ice bucket challenge" deserved more visibility than what had just happened in Ferguson, Missouri, where an (yet another) unarmed African American had just been killed by a police officer.

Many scholars, and activists as well, have finally started to critically examine the mismatch between what these corporate sovereign imaginaries preach as well as their practical implications and applications, trying to come to terms with "the apparent inconsistency between the disenchantment of individuals with politics and the popularity of global movements, international mobilisations, activism" (Floridi 2015, 59). These reflections should be seen in context of wider research on the impact of the digital on the public sphere and society, where scholars increasingly acknowledge how the "democratic"

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features of the internet and some digital platforms are, perhaps, endangering democracy itself, generating new forms of inequalities, surveillance, disinformation and polarization (Anderson and Rainie 2020; Zuboff 2019; Bucher 2018; Byung-Chul 2017).

Re-imagining new sovereign practice of protest

As mentioned in the beginning of this chapter, Cornelius Castoriadis tells us that imagination is always and already in power, in the sense that it is imagination that shapes our ways of understanding and seeing the social. This power of imagination is the power through which individuals are socialized. This power, again following from Castoriadis, is more powerful as it operates invisibly. It only becomes apparent – Castoriadis calls this the explicit power – when the imaginaries on which the power is built are called into question and challenged by the autonomous collectives that exercise their imaginative and alternative power against the status-quo. Until it is contested, the power of tech corporations would appear to us as completely self-evident.

As this imaginary power of the corporate digital sovereignty aims to stay absent (and invisible) in order to function effortlessly, the project of the alternative imaginaries of digital sovereignty should aim at making this power present and visible instead. In order to build the popular digital sovereignty, one should start, among other things, to critically re-appropriate the symbols of this power. As Zuboff beautifully said, this would mean reminding the younger generations "that the word 'search' has meant a daring existential journey, not a finger tap to already existing answers: that 'friend' is an embodied mystery that can be forged only face-to-face and heart-to-heart; and that 'recognition' is the glimmer of homecoming we experience in our beloved's face, not 'facial recognition'. … These things are brand-new … They are unprecedented. You should not take them for granted" (Zuboff 2019, 521). Finding imaginative ways of continuously reminding us of the naïve principle of technological determinism that wants to shape technology as some sort of abstract force which influences society but is not itself the product of social forces, means to resist the technological fetishism that is a key symbolic concept of the digital sovereignty principle. There are many examples of how this can be done and has been done (including in fact many of the contributions in this book). I am thinking here about civic tech initiatives that reclaim a

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different and locally rooted use of technologies, or critical data literacy tools (Brand and Sander 2020) that remind us of the importance of cultivating both a digital literacy and a critical capacity as well.

The main argument of this chapter has been to focus on the relationship between the digital sovereignty of people versus the corporate, as a way to advance the wider debate on digital sovereignty and to build a critique of the legitimacy of the corporate version of sovereignty from the bottom up. We have briefly seen how competing imaginaries are shaping democratic practices of protest and activism and that claims of the individual (or better collective) digital sovereignty – as defined by these corporations – do not actually find any confirmation in practice but are very powerful on the level of the symbolic to claim legitimacy for corporations *vis-a-vis* the state.

Emptied and commercialized, the possibility of achieving "people sovereignty" has therefore been made more difficult even to simply imagine, as corporate sovereign imaginaries structure the ways in which activists develop their protest logic – what forms of resistance are seen as possible and which ones are successful. But activism is – I believe – at the same time the victim and the savior of corporate digital sovereignty. Social movements have in fact traditionally played a crucial role in building and mobilizing the collective imagination (Haiven and Khasnabish 2014), and this role now becomes crucial to address the digital sovereign imaginaries, unveiling the limits of the existing ones and building alternatives. As Evgeny Morozov reminds us, a radical critique of technology "can only be as strong as the emancipatory political vision to which it is attached" (Morozov 2015, 1). We need stronger movements and civil society actors (together with states and supranational institutions) to re-imagine a new relationship between politics, society and technology where technology is not at the center. A renewed and popular digital sovereignty will in fact only follow from a renewed democratic practice.

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Geofilters

Vertical Sight and the Tropikós Turn

Juan Pablo Garcia Sossa

NowHere

Mid-brown skin, dark black hair – my eyes turn from brown-yellow to green-grey when the sunlight turns. I was born in Colombia. I grew up in Bogotá, in one of the many hearts of the mountains and one of the middles of the tropics. I am a designer, researcher and artist. I've been developing my practice between Berlin and Bogotá, fascinated by the clash between emerging technologies and grassroots popular culture from tropical territories – investigating the development of cultures, visions, realities and worlds, through the remix and reappropriation of technologies in the tropics.

This is from where I speak. In the following lines, I will expose my current visions from NowHere around (sovereignty in) the tropics and my process investigating and developing GeoFilters.

The Shift / The Turn

There's a shift. Something is changing and something is moving. Some can feel it in the air. Tiny micro-particles of dust are aspirated by lungs inside humans residing in cities. Some might feel it in the plastic micro particles of the water we drink and the food we eat. There's a shift. The magnetic forces of the North Pole are shifting from Canada towards Siberia and on the long term it might shift to the south of

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planet Earth. Poles are flipping like a relay, some say it is a time of crisis. Something is emerging.

Inside "emergencies" you find "emerge," and tropical territories are well experienced at this. Between the imaginary lines of Capricorn, a circle line 23.5 degrees south of the middle of the planet, also known as the Equator; and Cancer, 23.5 degrees north, lies the tropics. The Tropics are regions that have been historically disenfranchised, undervalued, exploited and (over-)exoticized. Very often the tropics are considered cocktails of sun, sand, sea and crises where fertile grounds face troublesome and troubled realities that challenge what is possible and what is not, almost every day. But the Tropics is more than a physical and geographical space. In essence, the Tropics must be understood as metaphysical, and even psychological dispositions. A way of existing that is anchored in the meandering and swiveling of mundane notions of existence. With the dearth of state infrastructures and an abundance in stranger-than-fiction realities, Magical Hackerism has emerged as an attitude. The writings of Gabriel García Márquez from Colombia or Ben Okri from Nigeria, among others, have been recognized under the concept of Magical Realism because of the supranatural, fantasmatic twist they give to that thing called reality. But one could actually say that what Magical Realism does at its foundation is a process of hacking reality, and with it its cultures and technologies, its norms and attitudes, its banalities and politics, even its geographies and economies and its laws of gravities: making up the core of its physics as much as other mundane occurrences. It is from this perspective and the analysis of this modus operandi that the notion of Magical Hackerism emerges. How can the concept of digital sovereignty be manifested in the tropics?

DATA as Oil – Ways of Verticality and Exploitation

Imaginary lines were drawn on planet Earth. Meridians and Parallels (Latitudes and Longitudes) were composed in a way to intersect each other forming a grid, with a main intention to help humans understand and navigate the planet. This mesh of lines not only explored ways of understanding the planet but also of controlling and dominating it. One story would have it that in 1492 a man departed from Castile with three ships looking for Indian spices and, on October 12th of that same year, arrived in a land that he initially called the Indies of America. He set foot in what some knew by the name of Abya Yala

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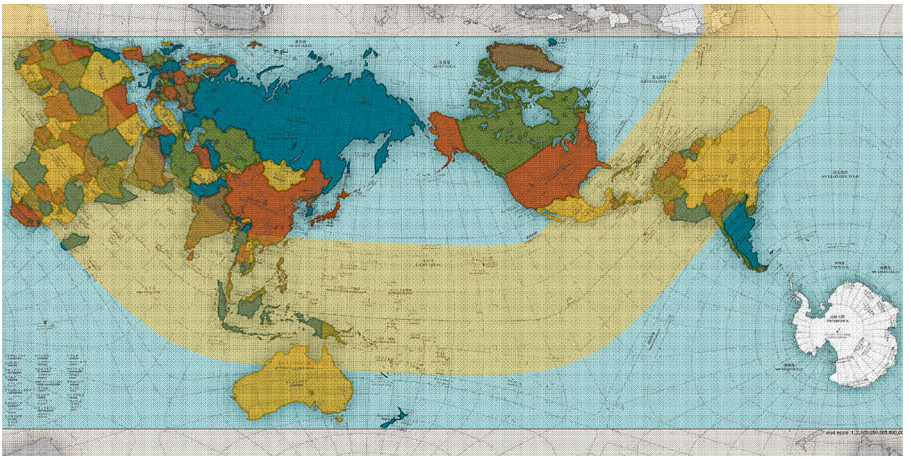

Fig. 1 This is an AuthaGraph map of the planet highlighting the tropical belt. This rectangular world map is made by equally dividing a spherical surface into 96 triangles, transferring it to a tetrahedron while maintaining areas proportions and unfolding it to be a rectangle. It is considered as one of the most precise maps displayed in a rectangular form because of its number of divisions (Stinson 2016).

and claimed the land for Spain – the rest is "history." Half a century later, in the year 2020, these navigational routes are drawn by submarine internet fiber-optic cables that go from the African continent to their former colonial empires and from Latin America to corporations based in Madrid (Bridle 2018a).

The Tropics have historically been regions exploited for minerals and resources. With the biggest reserves of bauxite, phosphate rock, and cobalt (*BBC News* 2019), among many others. Cobalt is a mineral used to produce lithium-ion batteries that power our phones, computers, digital devices and for some people, even cars as well.

Diverse territories are exploited for the extraction of resources, often leaving irreversible changes. In many cases, the benefits or profit from these exploitations aren't connected or linked to the communities and territories at their geographical positions. The coal extracted from the Cerrejón, one of the largest open-pit mines of the planet located in northern Colombia, is owned by foreign companies based in Australia, Switzerland and the UK and contributes to the electric energy produced for northern Germany by the enterprise Vattenfall (Vattenfall 2019).

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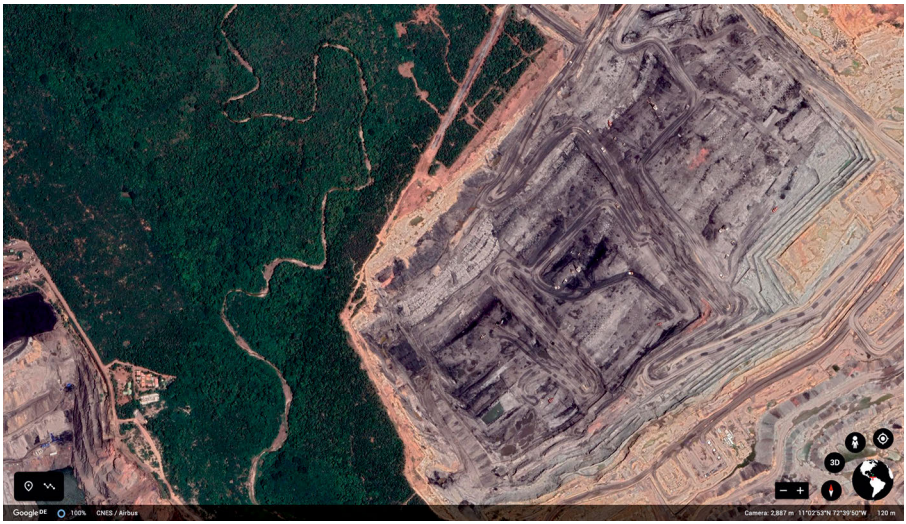

Fig. 2 Cerrejón open-pit coal mine in northern Colombia. Google Earth. CNES / Airbus.

In places such as Cerrejon, rivers are diverted and sucked from the soil to maintain the streams and flows of what we commonly refer to as "the cloud." In big metropolitan areas around the globe, from Berlin, NYC, Moscow and Seoul to Hanoi, Mumbai, São Paulo and Bogotá, thousands of devices are connected to the internet and communicate with each other. These devices, such as computers and telephones, but also now coffee machines and fridges (and whatever device that has the "smart" prefix), are not only speaking to each other but are also gathering huge amounts of data that reveal very detailed behavioral patterns and specific dynamics for specific profiles and personalities. The data extracted is very often exploited for advertising purposes with micro-targeted content that engages audiences, carries out the surveillance of citizens and potential "terrorists," and facilitates political manipulation (Naughton 2019).

For some years already, an idea has been growing: data is the new oil. Repeated as a mantra of the modern world, this phrase was possibly coined in 2006 by British Mathematician Clive Humby (Palmer 2006). "Data is just like crude. It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc. to create a valuable entity that drives profitable activity; so must data be broken down, analyzed for it to have value." This was

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the departure point for the comparison made. Later on in May 2017, *The Economist* published an article called "The world's most valuable resource is no longer oil, but data." It began with:

> A new commodity spawns a lucrative, fast-growing industry, prompting anti-trust regulators to step in to restrain those who control its flow. A century ago, the resource in question was oil. Now similar concerns are being raised by the giants that deal in data, the oil of the digital era. (The Economist 2017)

It was clear at this point, we started relating to data in a similar way to which we relate to our environments. We started replicating the same dynamics and models around the idea of resources. We started reproducing verticalities. Whenever verticalities are involved, it is very likely there would be exploitative and extractivist relationships.

British writer, artist, journalist, and technologist, James Bridle points out in an article he titled "Data isn't the New Oil – It is the new nuclear power" that

> ... our thirst for data, like our thirst for oil, is historically imperialist and colonialist, and it's tightly tied to capitalist networks of exploitation. The same empires first occupied, then exploited, the natural reserves of their possessions, and the networks they created live on in the digital infrastructures of the present day: the information superhighway follows the networks of telegraph cables laid down to control old empires. (Bridle 2018b)

Bridle goes on to elaborate on the dangers of treating data as oil by pointing out the replication and extension of old models in what present themselves as new systems.

> The Empire has mostly rescinded territory, only to continue its operations and maintain its power in the form of networks. Data-driven regimes repeat the racist, sexist and oppressive policies of their antecedents because these biases and attitudes have been encoded into them at the root. (Bridle 2018b)

Where do these verticalities come from? Why are we extending and perpetuating verticalities in the way we relate with each other?

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The Tropics nowadays represent places to exploit not only resources but also from which to extract new and valuable data, as Cambridge Analytica did in Kenya's presidential elections in 2013 (as a test run) and 2017 (with now tried and true methods) (Moore 2018). Satellite imagery, today, and its vertical line of sight is data used in combination with algorithms for the "old" forms of exploitation of oil and other natural resources (Ali 2019). With rising demand for electronic appliances and lithium-based batteries, the transition of the planet to green energies might keep inflicting irreversible wounds on the Tropics.

The Greek roots of Tropics is Tropikós – It means to Turn

When I think of the Tropikós as a mindset, I recognize the ability to develop elastic and symbiotic ways of relating with diverse environments, dance with their pulses and turn around their energies. It isn't about mere control and dominance over the environment. It is more about revolving around the questions of what we can do with the conditions we face in our realities and what ways can we find to turn them around. This understanding of tropical resilience goes beyond the idea of resistance and is closer to the idea of re-existance, as Argentinian theorist Walter Mignolo proposes. It is more about elasticity and flow as key aspects redefining the understandings of these pulses.

Many cultures in the Tropics and Subtropics have developed diverse strategies to respond to their environments in symbiotic ways. Floating villages made out of reed in the Titicaca Lake between Bolivia and Perú, as well as in Iraq; Living root bridges in India; Mountain Terraces in Perú and Subak agrarian systems in Bali; these are some of the various examples of tropical resilience and endemic knowledges.

Designer, activist and academic, Julia Watson has gathered a collection of these cases in her book Lo-TEK: Design by Radical Indigenism (Watson 2020), in which she explores nature-based technologies for climate-resilient design. With these examples, Watson proposes to reframe our understanding of what smart is and look at natural intelligences already present in our environments. Instead of approaching them with an intention to control them, we could approach them on a same level, trying to provoke a symbiosis.

My interest in (and the occurrence of) such tactical, resilient or elastic forms of knowledges, designs and technologies is not limited to traditional indigenous knowledge. It also includes expressions

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found in grassroots popular culture of the tropics (not to be mistaken with folk culture nor pop culture). The grassroots popular culture of the tropics is guided by other aesthetics (Duque et. al. n.d.) and other relationships to objects, devices and technologies (García Sossa 2015): Guided by similar principles of symbiotic relationships with their environments as the ones previously mentioned, the grassroots tropical culture develops other ways of relating to their artificial environments. These endemic and situated knowledges are based on the "misuse" or re-appropriation of technologies, re-scripting instruction manuals for unintended purposes that turn situations around and develop scenarios otherwise unthought of in the Global North. Various forms of such Tropical Hacking or Magical Hackerism have been the focus of my design, research and art practice, and multiple instances can be found in contexts such as the Brazilian Jeitinho (Wikipedia 2021a) and Gambiarra (Fred 2011), the Latin American Rebusque and Hechiza and the Indian Jugaad (Wikipedia 2021b), among many others. Workarounds that understand the inputs and forces of our digital environments and are elastic enough to turn them around and develop symbiotic relationships with them: This is the Tropikós as a mindset.

Revealing while Hiding: The Tropikós and GeoFilters

The Tropikós mindset guides the principles behind the maneuvers or ways of GeoFilters, a research project and installation developed for the exhibition "Practicing Sovereignty – Means of Digital Involvement." GeoFilters is an experimental reaction to and investigation of the environmental situation in Colombia and other tropical territories such as Brazil, India and the Philippines. These were the territories with the highest reported killings related to environmental activism in 2018 according to Global Witness, an organization investigating the links between natural resources, conflict and corruption (Global Witness 2019). As of today, over 265 social leaders and environmental activists have been systematically murdered in Colombia since 2016.

GeoFilters take the form of a two-screen multichannel interactive installation. On one screen, an animation displays a satellite view of an endangered territory, and on the other a "digital mirror" is displayed with the help of a camera. When a person stands in front of the installation, their faces are covered by face filters with gigantic open mine holes placed on their cheeks or forehead. GeoFilters is a

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collection of face filters generated using the texture of satellite imagery of endangered territories. The images depict the geo-position of an ecosystem under social and environmental threat.

Vertical sight has been historically used as a means control. From observation decks to drones, one could say a view from the top implies an exercise of power over someone or a territory. Today, high resolution Earth Imagery has enabled scientists and environmentalists to monitor and count wildlife populations as well as to detect deforestation or illegal mining with speed and agility (Conniff 2017). This has been useful for monitoring mammal populations in Alaska or Iceland. The high definition quality of these images are not always a given for certain regions in the tropics. More often than not, satellite imagery of mines and forests is pixelated or blurred, remaining quite opaque. Google Earth argues these are regions of less interest or priority, according to the company when asked by Brendan Byrne and Dhruv Mehrotra about an outdated mapping of a military station in Nevada, USA (Mehrotra and Byrne 2018). But are they truly less interesting or less of a priority? To whom?

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Fig. 3 – 4 GeoFilters multichannel installation: screen on the left showing satellite imagery of endangered territory in the tropics, screen on the right generating a face filter with the texture of the environment. Photos: Alexa Beckmann.

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Fig. 5 Satellite Imagery of an open mine in Colombia – Not prioritized territories.

A departure point for GeoFilters is the exploitation of resources in tropical territories, such as the extractivist projects taking place in Colombia at present. From mining, oil extraction and logging to monoculture farming and cattle (Wasley et al. 2019), these activities have shown to be tightly connected to irreversible environmental changes. Taking both legal and illegal forms, dangers to the environment are sometimes recognized by the Colombian government and public opinion, but more often not. Because of a centralized system and a wide range of difficult-to-access areas, many territories in Colombia are isolated and obscured from the national and international view. With the promise of development and progress, both legal and illegal mining are carried out in ecosystems with small communities. Because of this scale, sometimes it can be troublesome to oppose these activities and projects. Opposing a project of illegal mining implies not only risking one's livelihood but also life – and denounced in doing so for "being against progress," like Colombian environmental activist Francia Márquez. The isolation or disconnection of these territories makes it difficult for them to be elevated in public debate to a national, international or planetary level. In the mainstream, not so many are even aware of the situation.

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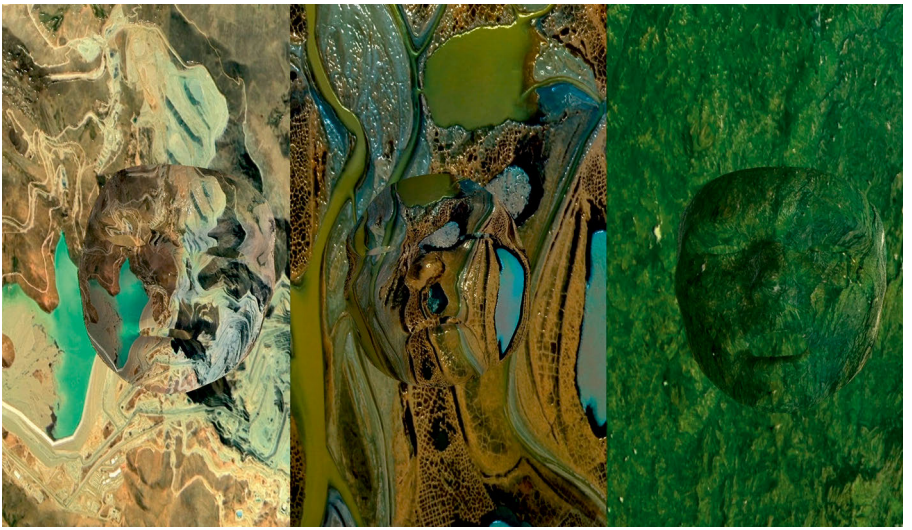

Fig. 6 GeoFilters: Face filters generated with textures of satellite imagery of environmentally endangered territories.

GeoFilters explores a at its core the idea of what it is to share one's data and geolocation in the age of information and surveillance capitalism with a purpose (Zuboff 2018). GeoFilters explores ways of revealing while hiding. While devices already collect our geoposition, there's the possibility one could re-position these realities and bring them closer to the eyes of a broader public and into the debate on a planetary level. Whenever a national government is reluctant to take action on these threats to territories and life, there could be a possibility to denounce and pass information on to a planetary society, while safeguarding one's individual private identity – by covering one's face. In 2019, when Brazil's Amazon rainforest burned for weeks, people across the entire planet, regardless of their nationality, mobilized to demand action from the Brazilian government of Jair Bolsonaro. When the Amazon rainforest burns, it not only concerns and affects Brazil, or even just South America, but it also has manifestations on the climate in Norway, Canada and Australia. To whom does territory belong?

There's a need to understand territories beyond private property. Rather, we must see them more in terms of fertile grounds for life itself: both for human communities and natural and artificial environments, on a planetary scale. The exploitation of resources in territories has costs for environmental sustainability and the lives of

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those determined to protect it. In cosmologies in the Tropics, such as *Sumak Kawsay* from the South American Andes mountain range, there's no separation between humans and nature, nor communities from territories. Often translated as "living well," *Sumak Kawsay* embraces the interdependence of all living and non-living beings in the planet. GeoFilters aims to manifest these principles through a *Planetary Embodiment*. When standing in front of the installation and seeing one's own face covered with scarified textures, some ask themselves: *Would I exploit my own body in this way?* If one wouldn't or couldn't separate planet from body, would one mine their own arm or drill their own face looking for coal or oil?

By drawing parallels between data exploitation and territory exploitation, GeoFilters reflects on the interconnection of endangered territories in the planet, as digital and physical meshes and layers overlap. There is a possibility to explore ways of re-appropriating one's own data – to reclaim digital and physical spaces. GeoFilters explores ways in which the vast mesh of sensors and data of the "planetary sensorium" can be in dialogue with the local specificities of each territory.

This project doesn't intend to focus on providing answers but rather to respond and react. To develop and trigger responses. It intends to reflect on the frictions, energies and pulses that compose the worlds we live in and how one could potentially turn them into symbiotic relationships beyond domination. It is true that with GeoFilters the implications of devices being specifically tracked in their geoposition are still there. It doesn't change the fact that there's always a risk of becoming a target for extractivism by certain groups. What this project is more interested in is to complexify our debate on data and privacy and acknowledge it. It is much more complex than the question of keeping individual data privacy or not. Especially when the idea of individual privacy itself gets more nebulous in tropical territories with all the nuances that come with traditions of collectivism and cooperatives, big families in tight spaces, beds and food for four people where a fifth can fit, too, and maternal policies of no-locking rooms, i.e., controlling moms can barge in without knocking. What one could emphasize here is that there are many complexities in the grey in-between spaces around the data privacy discussion and that there are no universal solutions to these issues. The responses are multiple. From a similar perspective, James Bridle suggests, as

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well, "maneuvers" as a shift or alternative to computational thinking – thinking like a machine (2018b). Solutionism prevents us – more often than not – from reflecting on the many implications engendered by the paths we take. In this way, considering a framing of responses and maneuvers could help us recognize the directionality in the ways we "progress" and actively direct and re-direct where we would like or prefer to head to.

Situated Responses Breaking Binaries

When we think of sovereignty in the Tropics, we must think of the tools, responses and maneuvers for world making. With an often-absent state, and a nebulous idea of citizenship, demanding rights through top-down policy making might sometimes feel too fictional in the Tropics. How can one demand something from a state that has never been there before? This might be a reminder that the mechanisms performed in the Global North don't apply the same way in the Tropics. And as the idea of privacy might be different in this region, the responses to this idea are very diverse as well. Art curator and consultant on ecological transition and social inclusion, Nataša Petrešin-Bachelez highlights the importance of conceiving various responses in dialogue with the local specificities of a territory:

> Rather than trying to find global solutions for some indefinite future, or projecting a possible perfect balance, resilient thinking focuses on the diversity of practical solutions for a specific locality, and on the cooperation and creativity of everyone involved in a community or society. (Petrešin-Bachelez 2017)

Similarly, as the tropical resilience exposed above within the Tropikós as a mindset, "The Turns" are responding to the conditions of an environment and are in a constant interplanetary dialogue. As someone that grew up in the Tropics, I often learned to develop my own workarounds – to provoke direct incidences in various realities and worlds. One could consider these responses beyond a set of tools and formulas, but more like a behavioral system, driven by reaction and response – meaning, ultimately, it is not important what one actually does, but more that one is *capable of coming up with something*.

So, the discussion is not limited to having privacy or not. What is critical in our realities are the verticalities present in them. Historically,

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many of the apparatuses, technologies and systems we live in have chosen to be opaque. These have become black boxes, in which, for a great portion of people, it is hard to grasp or understand how they work and what lies behind them. If our systems are opaque and often function in extractivist ways, it is understandable that one chooses as an individual to be opaque, so one doesn't become a target. The attempt with GeoFilters is to reframe those systems rooted in the question: What could we do if we purposely wished to share our geolocation? How could we turn that situation into a response to the complexities of our local realities and reverse the dominant logic by making it a strategy for visibility? In this case, understand how engagement algorithms in social media work (Phillips 2020) and take advantage of the way content is prioritized in feeds when they use AR face filters, to make visible these denunciations. The Slovakian researcher and theorist Lukáš Likavčan, elaborates in his practice on philosophy of technology and political ecology. He emphasizes that "we need a framework of situatedness that puts every site on Earth on an equal footing: working towards cosmological multiplicity under a common frame of reference" (Likavčan 2020). Western Globalism, as he describes in his article "Searching the Planetary in every grain of sand," is a dominating form of cosmology and there are many other cosmologies taking place on the planet at the same time. To stop understanding our planet in terms of binaries, more situated responses are needed to complexify our realities.

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Postdigital

Thomas Ramge

In May 2013, Napster founder and Facebook advisor Sean Parker commissioned the construction of a dreamlike, kitschy medieval backdrop among the redwoods of northern California on a former campground not far from an idyllic Pacific bay. It boasted a fake castle ruin, an artificial pond with a bridge and waterfall, a ten foot Celtic cross, an altar made from fallen Roman columns and a forged iron gate bearing his initials and those of his future wife, the singer Alexandra Lenas. On June 3, Parker meant it to be the site of the most amazing wedding that northern California had ever seen. In a lengthy and heavily illustrated story, *Vanity Fair* documented how the "charismatic" tech billionaire and his "beautiful" bride made good on their promise of a party to remember.

The ultra-wealthy elite of Silicon Valley celebrated along with superstars of show business, such as Emma Watson and Sting, who sang a few of the newlyweds' favorite songs. Prominent politicians were also in attendance, including the governor of California and then Democratic senator Kamala Harris. The designer who had worked on the *Lord of the Rings* film trilogy designed celebratory costumes for all 364 guests, including the less prominent among them.

This essay is an excerpt from Thomas Ramge's book: Postdigital – Using AI to Fight Coronavirus, Foster Wealth and Fuel Democracy, Murrman Publishers, 2020.

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The wedding's planner, Ken Fulk, described the giant party as "Citizen Kane meets Gatsby." As they exited the party, the guests received a leather-bound volume containing the newlyweds' love story as a souvenir. But just a few days later, the extravagant fantasy wedding with a *Game of Thrones* look turned into a real-world PR disaster.

While building their fairy tale wedding backdrop, the Parkers and their contractors had violated environmental regulations, as the California Coastal Commission announced immediately after the big event. The internet billionaire, aged 33 at the time, quickly reached a mutual settlement with the authorities to pay a fine of around two million dollars that would go toward protecting the redwoods. But from then on, the glamorous wedding photos appeared not as illustrations for star-struck articles in society magazines about the lives of the rich and famous, but in Tweets and feature stories in the New York Times and Washington Post about the failings of capitalism and globalism and the ignorance, self-importance and double standards of Silicon Valley's tech elite. That the Parkers opened their wallets to the tune of two million dollars afterwards to correct their "planning mistakes," or that they reiterated how they had asked the wealthy wedding guests to donate to environmental projects instead of bringing gifts, didn't make things much better in the eyes of many critics. The attitude of moral correctness could rather be interpreted as additional proof that the digital start-up heroes were living in their own little green-tinted filter bubble.

Economist columnist Adrian Wooldridge saw the environmental disaster of the wedding bash as a turning point in public perception of the "plutocrats of cyberspace." Until then, the founders of Silicon Valley's tech start-ups had been seen as agents of progress, as the people who had made the internet a space for the free exchange of information, an engine for democracy and political emancipation, and a gateway to the physical and non-tangible goods of a self-empowering economy that matched the spirit of the Cluetrain Manifesto (Levine et al. 2001). Until the middle of the decade, bankers and executives of traditional corporations, especially oil companies, were unchallenged in their roles as the personified targets of anti-capitalist rage. In their protests against the richest one percent, the Occupy demonstrators in New York and various European cities had carved out an exception

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for those who had provided them with the iPads, smartphones and digital platforms they used to organize their furor.

At the end of 2013, with the Parker wedding in mind, Wooldridge predicted: "The Silicon elite will cease to be regarded as geeks who happen to be filthy rich and become filthy rich people who happen to be geeks" (Wooldridge 2013). Wooldridge coined a term for the phenomenon, which continues to be thrown at the stinking rich nerds of Sunnyvale and has fundamentally changed the perspective on the social effects of Silicon Valley-style innovation: "techlash," a combination of "technology" and "backlash." In his article, the term primarily has a personal meaning and is directed against the people who created the digital tools that are changing the world. As if to confirm this thesis, Mr. and Mrs. Parker later reported in shock and disappointment that after the heated debate about their wedding, they had been spat at on the street, insulted by waiters in restaurants and flooded with hate mail on social media (Parker 2016). But at this point, the term "techlash" is no longer tied to a specific class of people in the USA. The backlash turned into a movement of its own. Once universally loved, the tech sector morphed into "Big Tech" – and thus into the fourth member of the bogeyman triumvirate formerly consisting of Big Oil, Big Finance and Big Pharma. Surveys show that Americans now trust the big tech companies even less than banks.

The movement to resist digitalization is expressing and organizing itself – where else? – primarily on the internet. It's led to a number of best-selling books, including Jaron Lanier's *Ten Arguments for Deleting Your Social Media Accounts Right Now* (2014), Shoshana Zuboff's *The Age of Surveillance Capitalism* (2019) and Roger McNamee's score-settling with Facebook – written by an early investor and mentor to Mark Zuckerberg – with the self-explanatory title *Zucked* (2019).

Major techlash figures often write and speak in the disappointed tones of people who had long believed that digital technology aided the progress of individuals and society and who had even experienced it themselves in many situations, but who could now see that the major tech companies and their digital platforms were scaling up the ills of the world in at least four areas.

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Smartphone Addiction

Digital applications are programmed to maximize how much time we spend with them, how often we click on them, how regularly we return to them and how much data we disclose to them. All this helps the providers of the applications to seduce us with carefully-dosed dopamine kicks into wasting even more time with them. For our tween or teenage children, every additional hour of screen time seems like the greatest possible reward. No offer to play soccer outside with them instead or to visit the natural history museum together can pull them away from the digital maelstrom. Not that we adults are any better. Even we can't help prodding the touchscreen as soon as a new WhatsApp message pings. We know that we're giving up a little piece of privacy with each post on Instagram or LinkedIn – and yet we still do it.

Savvy techlash folk, of course, realize that smartphone addiction involves the individual responsibility of each user. But app providers' deceitful interpretation of "user oriented," techlashers complain, is focused not on maximizing the actual benefit to the user, but on mega-monetizing the user's time or data. As a rule, both happen at once, which the digital contrarian Jaron Lanier (2014) summarized with the oft-quoted formula: Users are not the online companies' customers, but rather their product. The real customers are the advertisers who buy access to the users.

Even if the new bankers and oil firm executives of data capitalism were to use their data-based power exclusively for legal advertising, the terrorist-like demand for our attention via our digital devices is their responsibility.

Digitalization aggravates inequality

Today, people hardly think of Google CEOs as nerds who want to make information available to everyone in the world. They are instead much more likely to be seen as the top dogs of a monopoly that pays almost nothing in taxes anywhere in the world. The nice nerds with money have turned into ultra-wealthy trolls, even when they're not wearing Lord of the Rings costumes.

In the mid 1990s, the internet had promised a new economy with more opportunities for everyone: a space of limitless possibilities with greater equality of opportunity. The internet made the world flat,

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as Thomas Friedman (2005) put it. Everyone could play on a level playing field without an unfair cleavage between north and south.

But the current perception is that the network effects of digital platform capitalism are making the super-rich even richer. A tiny tech-enabled elite is securing a big piece of the pie for itself, while the rest cling in terror to their positions in the middle class – that is, unless they're already delivering packages for Amazon or ferrying passengers from the better neighborhoods for Uber. An image frequently used by techlash spokespeople to describe these socio-economic changes is the "return of the servant class." The job market is dividing into lovely jobs and lousy jobs. The winners are seeing their paychecks regularly increase, while the losers are hauling Amazon packages to the beautifully restored homes where the winners live.

Social media harms democracy

The Arab Spring of the early 2010s seemed at last to be fulfilling one of the central promises of digitalization: Democratic discourse could finally be organized openly by using the internet and digital media. An open Net would lead to an open society (in the definition of Karl Popper) in which "human rationality" would work for the common good. Just ten years after demonstrators in Tunisia, Egypt and Yemen had rid themselves of their autocratic leaders with the assistance of Twitter, Facebook and YouTube, the successors of those autocratic leaders and dictators throughout the world are using digital technology for surveillance, oppression and manipulation. China under Xi Jinping is well on its way toward reinventing dictatorship by digital means and creating the almost perfect surveillance state.

In the meantime, social media are infecting democratic discourse in the Western world like a computer virus. Propaganda is their viral load. The filter bubbles and algorithms that give radical messages a worldwide stage, combined with political manipulation by foreign and domestic troll farms, have at least aided the rise of populists. Many prominent techlash figures are convinced: Without social media, there would be no Trump, no Brexit and no re-emergence of the German far right.

Digital systems accelerate climate change

Thanks to digital systems, we can finally live in a green world – right? That too was one of the great hopes for improving the world shared

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for years by tech entrepreneurs and environmentalists alike. In detail, that meant smart electricity networks would make the switch to renewable energy possible. Thanks to smart transportation, we would combine environmentally friendly modes of transport, reduce traffic and need fewer cars overall. Through telecommuting and video conferences, we would reduce rush-hour traffic and business travel. Big Data would plan logistics so intelligently that no truck would ever pull an empty trailer (today it's around a third of all those on the road). At the same time, we would dematerialize physical goods like letters, CDs and DVDs, sparing the environment and conserving scarce resources. It doesn't take a drive to Blockbuster to binge on Netflix. And the digital thermostats in our smart homes would turn down the heat at just the right time. That was the dream, at least.

For each of these promises, well-functioning examples exist today. But the further digitalization progresses, the more obvious the rebound effects are becoming. The British economist and philosopher William Stanley Jevons observed this process as early as 1865, at the peak of the Industrial Revolution in England. His rebound thesis, which has since been empirically confirmed multiple times, is that in the long run energy-efficient processes lead to higher energy use because, by lowering costs, they aid the overall spread of technology (1865). The original Jevons paradox was concerned specifically with coal as a fuel used in smelting furnaces. Today, environmental economists can observe that a single low-energy light bulb may save electricity, but people suddenly have many more light bulbs, which in turn require a large amount of energy to produce. They see that car sharing has taken many riders off the subway, but only a few have given up their private cars entirely. And they see how electric scooters with a sharing app are marketed as environmentally friendly "micro-e-mobility solutions," but don't replace short car trips. Instead, they make it less likely that people will choose the most environmentally friendly of all forms of mobility: walking and riding a bicycle. By applying intelligent measures and with some good will, people can counteract rebound effects, at least theoretically, as the environmental economist Tilman Santarius shows in his book *Smart Green World?* (2018). A smart home can optimize energy usage – but not the inhabitants' comfort level.

Viewed from above, digitalization may have its own rebound paradox, a contradiction from which there is no exit. Economically

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and culturally, the successful models of the platform economy are entirely designed for quantitative growth. They stimulate consumption. Sufficiency, or limiting oneself to what is most essential, is incompatible with Silicon Valley-style turbo-capitalist digitalization. In the same way, sufficiency and China's brutal state capitalist approach to digitalization are mutually exclusive.

There's an old rule of thumb among people who study trends: Every trend has a counter-trend. The only surprising thing about techlash is how late it got started. That's the view of Matthias Horx, Germany's top trend researcher, and he's not alone. A few years ago, Horx had to put up with public and online mockery by the bucketload whenever he questioned whether digitalization was leading to anywhere near as much progress as the ubiquitous tech evangelists claimed (2017). Today, when he writes or speaks critically of technology, the feedback he gets is often along the lines of, "Finally someone's pointing out that it doesn't work" (2019).

In German-speaking countries, Matthias Horx revived the concept of the postdigital. The term had first appeared in the mid-1990s in discussions of the aesthetics of electronic music and media art. In 1998, just as the commercial internet was experiencing its first boom, the computer scientist, co-founder of the MIT Media Lab, venture capitalist and organizer of the "One Laptop per Child" initiative, Nicholas Negroponte, proclaimed in his influential *Wired* (1998) column: "The digital revolution is over." What Negroponte meant by that was, of course, not that computers and digital systems would no longer play any role in our lives. He was instead saying that we were already taking computers for granted so thoroughly that we would only notice if they weren't there, and we would have to relearn how to sensibly incorporate them into our everyday lives. Not long after and in a similar vein, the Italian philosopher Giorgio Agamben (2005) elevated "postdigital thinking" to a new paradigm for understanding the positive and negative consequences of life with computers. Agamben – who referred to digital technology as "welcoming and scary prosthetics" – proposed that the new paradigm would make it possible to examine the topic to a level of detail that the superficiality of digital-technical faith in progress had so far prevented. There was minimal response to Agamben's proposal.

Techlash – and the increasingly obvious rebound effects of digital technology that led to it – will be the starting point of a new

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postdigital discussion. A new discussion of the postdigital also requires a new perspective on the digital. We have to move beyond the quasi-religion of digitalism, the transfiguration of digital technology into a solution for every situation, and place digitalization in a radically new paradigm of costs and benefits. We have to learn to use digital technology in general, and artificial intelligence in particular, *sovereignly*: that is, self-reliantly, naturally and calmly. But above all, we need to learn *not* to use digital technology when it doesn't benefit us.

The essayist Wolf Lotter understands "postdigital" not as the end of digitalization but rather as the end of the myth of digitalization. In the postdigital age after techlash, people are going to develop a radically pragmatic attitude toward all things digital. People will use digital systems when they make life easier. When they don't, they're out. And, as in postmodernism, new syntheses become possible at higher levels because (among other things) we have finally learned to distinguish between those "welcoming and scary prosthetics," as described by Giorgio Agamben (2005).

Postdigital human beings will understand that their brains can't deal with the endless stimuli smartphones inflict on them. As a consequence, they will have to learn the cultural technique of mental autonomy. The mindfulness movement could be one of the most important heralds of this development. We can counteract digital exhaustion, as described by Markus Albers (2017), if we have sufficient analogue recovery phases. A postdigital society won't discuss politics online like a primitive one that hasn't yet discovered techniques for moderating conversations. Or in other words, postdigital discussions will have nothing at all to do with the principle governing social media today, according to which those who yell loudest find the largest audience, while a sober appraisal can only hope that the trolls on either side shoot themselves.

At the same time, in the postdigital age, the digital will become completely trivial. Nicholas Negroponte (1998) opened his prophetic column about the end of the digital age with a sly reference to the famous scene in *The Graduate* where Mr. McGuire gives avuncular advice to the young protagonist, Benjamin Braddock: "Just one word: Plastics!" In the postdigital age, digital will become the epitome of triviality that "plastics!" was in the early postindustrial age.

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But in concrete terms, what would a postdigital world look like in which people – both individually and as a society – used digital technologies sovereignly? With respect to the four primary areas of the techlash critique, a scenario for the future is emerging:

- We'll only reach for our smartphones when there's a reason and not because each new reflexive use creates new reasons for the next ritualistic unlocking of the home screen.

- Companies will no longer digitalize their production, internal processes and communications because digitalization is the first commandment of management at the moment. Instead, they will rigorously test each step in the digitalization process against the most important criterion of value creation: What would this change *really* add to the bottom line? Sham innovations that in truth only complicate things – essential things like production, internal processes and communications – will be eliminated. Intelligent regulation will ensure that competition returns to digital markets and the superprofitable superstar firms will finally pay their fair share of taxes. That would help pay for the public infrastructure that the digital superstars also use in their highly profitable business models. If necessary, some essential digital services would be regulated much like water companies, natural gas suppliers and other basic utilities are today. At least the left wing of the Democratic Party in the US is having similar thoughts, as exemplified by Elizabeth Warren and Bernie Sanders.

- Democratic discourse needs moderation online and offline. The value of opinion in discussion is significantly lower than commonly supposed by those who are constantly espousing their own. Never fear, there will continue to be unmoderated discussion forums. PewDiePie will still have unfettered opportunity to riff on social topics (in between game play videos) on YouTube. But in the postdigital age, essential political debates will take place on discussion platforms where the discourse is serious, fact-based and nuanced, using real names and with pauses built in for reflection instead of a

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mad rush to respond. The fact check would have to be an inherent and accepted part of this culture of digital discussion. Truth would then be negotiated via some kind of Super-Wikipedia. Even the powerful must also express themselves on these platforms instead of through media rooted in visceral emotion like Twitter, or media designed for aesthetic self-promotion like Instagram. Perhaps software and platforms such as "Liquid Democracy" may come into use to enable new forms of direct, grass-roots decision making, especially at the local level. In the meantime, government and public administration will have learned to improve through digital technology.

- Technology is never good or bad. It depends on what we use it for. This statement, constantly repeated by tech-fixated idealists, is on the one hand naive. Technology is usually developed for a specific purpose in a socio-technical context. It's more suitable for this purpose than for others, and therefore it's not neutral. On the other hand, it's of course still true: You can use machine learning to promote the sale of a new digital device with a dreadful environmental impact. Amazon bred its recommendation algorithms with just this kind of value-maximizing function. By using similar systems that learn from more wholistic data sets, however, supply and demand could also be better balanced in decentralized energy networks.

In a green postdigital world, the fight against climate change will be a pressing goal, and perhaps the most important goal of new technological development. Perhaps in the fight against global warming, digitalization might even gain a second chance to radically improve the world: with decentralized energy networks, energy-efficient autonomous vehicles or a digitally controlled cradle-to-cradle (circular) economy. New green technologies might not only delay climate change. There will be an increasing importance for digitally supported innovations that promote resilience – that is, they will make it easier for people to deal with the actual consequences of climate change.

The future can't be predicted, but it can be created. What's stopping us from embracing a postdigital future with a radical paradigm

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for evaluating technology's costs and benefits? Or we could formulate the question positively: What would we need to make this vision of a postdigital future a reality? Gesche Joost, a scholar of design, Germany's former Internet Ambassador and a member of SAP's board of directors, answers the question with two words: "digital sovereignty." But Joost also wishes that critiques of technology were more constructive. I share this view.

No matter how attractive or even justified the ideas of techlash may be, the perpetual demands for absolute data protection and absolute minimization of data use are as wearying as an endless wait on hold for the next available agent, and as unproductive. The answer to techlash, says Joost, can't be for people to withdraw into a technological backwater. Constructive criticism of technology, on the other hand, will help us regain our digital sovereignty. This can only succeed if we develop digital technology that corresponds to our own desires and values, improve our ability to use it through digital education and finally turn the concept of a common digital market for like-minded countries into economic reality. More specifically, this means:

1. Areas of the Western world that have not invested enough in their own technological development, Europe in particular, need a massive and coordinated effort to turn things around. In the discussion of 5G cellphone networks and the potential for Chinese espionage or even sabotage by Huawei, an urgent question has received far too little attention: Why are there no European firms able to compete with Huawei on price and quality?

2. Digital education needs a kickstart, beginning with elementary school. This includes data science and coding and understanding social media and the platform economy. The concepts and materials used for teaching these topics have been tested and proven to be successful, but unfortunately are rarely used in public schools. You're more likely to find them used in private or non-profit initiatives such as those of the Open Knowledge Foundation.

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3. The third major area of action involves promoting innovation and regulation of digital markets. An important element of this is a consistent data policy. As described in the second section, if superstar firms construct data monopolies, then the data needs to be made open. But that's only the first important step. Open technical standards, if necessary enforced by law, have the same aim. Creating massive policy incentives for voluntary sharing of data, data cooperation and cross-sector data pools need to be on the agendas of national legislatures and regulators. And, of course, digitalization's biggest winners need to pay their corresponding share of taxes, whether in the form of a digital tax using the French model or in the form of a minimum global tax based on international agreements, as the German Foreign Ministry has proposed.

All of that is not just desirable, but the prerequisite for bringing the rebound effects of digitalization under control in the postdigital age. In writing this book, what surprised me most was how easily a self-consistent and emotionally powerful dystopian scenario can be formulated using the AI technology now available. From the present perspective, the alternative concept of a successful future with AI is much more difficult to formulate. Because the question always arises: Would we really want to let such a powerful digital companion like myAI so deep into our lives? Even if we knew that myAI would promote our interests alone, according to the best available data and its internal programming, and not the interests of anyone else?

The conflict between progress and regress will remain a dominant pattern of digital transformation, even if the next 20 years of technical change are more human focused than the last two decades of the tech tsunami spilling out of Silicon Valley.

Science, politics and journalism have at times identified the rebound effects of digitalization in general and of artificial intelligence in particular, but have not yet found a sensible overarching framework for analyzing them. In exploring the technical possibilities of machine-assisted decision making and the automation of decisions, we systematically underestimate our desire for autonomy of choice. In a specific situation, AI assistants have the ability to lull us with the sweet anesthetic of convenience. Artificial intelligence and the

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clever assistants it powers will encroach on us even if – or precisely because – they only have good intentions for us.

The only remedy is postdigital sovereignty. One of the most important skills of those who are digitally sovereign will be the ability to decide when to step back from the ubiquitous power of smart computers. In a specific situation, we will be able to assess when the technical expertise of these data-rich expert idiots benefits us – and when it doesn't. Once we've gained this skill, we'll be able to overcome the techno-pessimism underlying the current debate about technology. In our present state of being digitally conflicted, we quickly become accustomed to the benefits of digital systems and come to take them for granted – and at the same time, we encounter every potential risk with both outrage and paralyzing fear. The international techlash wave (which, perhaps surprisingly for many Europeans, is primarily led by American critics at present) might gain a cathartic function in the further development of digital systems in the 2020s. We need to identify technology's risks and rebound effects with healthy skepticism in order to unlock its progressive potential in the long term. What we need is a postdigital synthesis of digital innovation and critique of technology. Only then will we be able to use technology to work toward solving the great challenges of our time.

Intelligent machines will help us if we use them intelligently. If that's to happen, we have to make artificial intelligence smarter without letting it take control.

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Talk to Me

A Multilingual Installation as a boundary Object for Inclusion in Digital and Public Participation

Bianca Herlo, Sandra Stark and Malte Bergmann

Introduction

In the tension field between regulation, technology development and digital literacy, design is increasingly asking how the digital transformation can be made more equitable with regards to increasing social inequalities (Allmendinger 2015). Central to this is a renewed turn in critical social theories as well as in design and arts towards the role of artifacts and built infrastructures in shaping our realities, as well as towards material cultures (e.g., Barad 2014; Deacon 2011; Stakemeyer and Witzgall 2014). Within these developments that emphasize a new interpretation of the political implications of agencies and matter, the focus on design objects as epistemic objects (Mareis 2011) is gaining renewed consideration, with inquiries in the wide range of technical, political, social and aesthetic forms of knowledge that is negotiated in the given object itself and by means of this object. Against this backdrop, we use the artifact "Talk to Me. A Multilingual Interactive Installation" to elaborate on the role of design objects as epistemic objects in transdisciplinary processes. The installation was developed in the context of the transdisciplinary research project "INTERPART

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– Intercultural Spaces for Participation" (2018–2021);* INTERPART took a research through design approach (Frayling 1993; Findeli 1998). The aim of the project was 1) to design and foster spaces for intercultural participation in urban development and 2) to better understand the role of social design for more inclusive technologies within processes of analogue and digital participation.

Building on the research conducted in the project INTERPART, we will discuss the relationship between participatory design, technology development and their political and social implications within urban planning. Central to these considerations is the hypothesis that social participation significantly conditions and determines digital participation. This text is a plea for the development of hybrid artifacts and inclusive participation formats and at the same time for a turn towards facing social challenges of digital transformation processes.

"Talk to Me" was developed in order to investigate the question of how to design more inclusive modes of participation in urban development projects. Our starting point was to experiment with hybrid modes of engagement that combine physical and digital or online forms of interaction. The installation was part of a series of onsite public interventions in the German cities Berlin and Wiesbaden, conducted within the social living labs (Franz 2015; Dezuanni et al. 2018) of the research project INTERPART.

Here we first describe the design artifact in its form, function and context of use. We will offer a reflection of the design research process that led to the development of the installation and give a summary of the actual forms of use during the interventions. We mainly draw on ethnographic data to understand the forms of interaction between users and the artifact and investigate the larger context of the setup and the activities that were conducted. We will then reflect on our work in the context of the potentials and confines of digital and public participation.

* INTERPART (Intercultural Spaces of Participation) is a three-year research project (2018–2021), funded by the German Federal Ministry of Education and Research (BMBF) in the funding line "Migration and Social Change". Project Partners: TU Dortmund University (Spatial Planning), Berlin University of the Arts (Design Research), Berlin Senate Department for Urban Development and Housing, City of Wiesbaden, UP 19 Urban Research, Zebralog GmbH.

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The text closes with a discussion that aims at contributing, from a design perspective, to a wider discourse on concepts of digital sovereignty that focus especially on countering inequalities. By reflecting on the practices inscribed in and observed around the installation "Talk to Me," we contextualize design practices within a broader understanding of digital sovereignty as a process constantly in the making, as a condition of the ability to critically partake in the societal digital transformation and the shaping of our digitally mediated society. We therefore frame the findings with a focus on digital competencies and critical digital literacy. One assumption our findings are built upon is that people must experience and practice digital sovereignty in order to critically partake take part in the shaping of a digital transformation oriented toward the public interest – in line with the experimental approach to concepts of democracy stated by Helen Margetts (1994; 2015), an approach that focuses on the experience of democratic involvement and political participation. As a result, we assume that one of the main goals of design practice related to inclusive collaboration and the co-production of knowledge is to foster discussion and negotiation about the ways in which digital technologies reconfigure our participatory practices.

Fig. 1 Public installation in Berlin Moabit 2019. Design Research Lab.

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Fig. 2 Public installation in Berlin Moabit 2019. Design Research Lab.

Initiating intercultural dialogue

"Talk to Me" is an interactive, multilingual installation that was designed as an artifact of intervention in public space. Its aim was to initiate dialogues with city dwellers. Our two leading research questions were: How can we design analogue and digital spaces of participation that are more inclusive in the context of urban planning and development, especially in highly diverse neighborhoods? How do we promote more inclusive dialogue? What role does digital participation play for individuals who usually do not take part in conventional participatory processes?

We were part of a research team that consisted of actors from different academic disciplines and practice partners, including designers and design researchers, sociologists, urban planners as well as colleagues from the partner city administrations, from participation practice and urban research. The field research took place in the German cities of Berlin and Wiesbaden.

In order to establish a presence in the social living labs in the two cities in the first half of the research project period, two public interventions were organized in each city. The research approach

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"social living lab" (Franz 2015) was applied during the project duration in both cities as a transdisciplinary research framework: It included stakeholders from different fields in the co-research process, such as researchers, designers, community organizers, policy makers and local civic actors. Generally, the conceptualization as a social living lab emphasizes the assumption that the increasing symbiosis of local civic engagement and research infrastructures makes way for new possibilities for collective and collaborative problem identification and subsequent action to emerge – especially when the specific social context is regarded as central.[1]

The social living lab is first and foremost a research approach that focuses on social change in real-world contexts. In a social living lab, committed people from science and practice come together driven by a common topic and focused by time and place constraints. They address problems that directly affect coexistence in social, ecological or political terms (Bergmann et al. 2021) while linking theoretical-scientific knowledge and experiential knowledge. Social living labs stress the importance of considering the local context by developing a space of encounter and collaboration that is rooted in the actual life-worlds of those partaking in these processes of transdisciplinary inquiry (Wanner et al. 2018) – and by implementing a set of co-design methods and experimental technologies that foster negotiation processes with a special focus on countering phenomena described as the digital divide and digital inequality (Herlo et al. 2020).

Against this backdrop, being on the ground in real-life contexts allowed the project team to include local stakeholders and city dwellers as co-researchers in the process. The interventions consisted of a set of experimental participatory formats, with the installation "Talk to Me" as its center piece (Figs. 1–2, intervention).

1 In German discourses and funding structures on transdisciplinary, participatory and transformative research, the term *Reallabor* (real life laboratory) is usually used. While the concept of the "living lab" first emerged theoretically from the Massachusetts Institute of Technology in 2006 (Hillgren 2013) and has since then been spreading rapidly and worldwide (The European Network of Living Labs ENOLL), the concept of real life laboratory originates from sustainability research (Schneidewind and Singer-Brodowski 2014; Gerhard and Marquardt 2017). Despite different traditions, the terms are also often used synonymously. Depending on the discourse or objective, differences in methodology or implementation are possible, but the concepts show great overlap: They are understood, especially in Europe, as instruments to achieve greater citizen participation and social cohesion.

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Visually and materially, the doorbell/intercom motif of the installation's interface was meant to establish a connection to urban life and referenced a familiar form of dialogical interaction. Examining names from different cultural backgrounds on doorbell panels of big apartment buildings is one way of learning about the diversity in one street or block. We also saw the possibility of the intercom as familiar, low threshold artifact offering affordance (Gibson 1979), which has the potential to temporally create a communicative bridge between strangers. The construction design referred to the concept of spatial intervention, which in the research context of INTERPART was defined as a temporary, playful and experimental interference in public urban spaces. All public interventions within the social living labs were designed to create a degree of irritation for the participants, and to break with some expectations that are attached to formalized participatory events in urban planning. This design approach was chosen with the intent of creating situations that are open to new pathways of interaction which may eventually break out of the self-referential framework of established participatory formats. For this purpose, the intercom was attached to a human-sized gate construction big enough for a person to walk through and placed prominently as an "entrance" at the intervention sites (Figs. 1–2). At this entrance, participants were asked to select their preferred language for the dialogue to follow by pressing a bell sign and thereby initiating the interaction. Conceptually, the artifact unified different experimental and playful approaches to address challenges of language barriers in urban participation processes. Attached to the doorbell interface was a Raspberry Pi mini-computer with a mobile LTE router connected to Google's AI-based translation software *Google Translate + google speech to text and text to speech*. For the participants that were interacting with the installation, the intercom consequently became a multilingual, tangible vocal user interface: a user interface where commands to a computer are given via a physical object. By designing "Talk to Me" as a multilingual interactive installation, we intended to gain insights into how interfaces need to be designed to make digital participation accessible to people with different language backgrounds.

The language selection for the installation was based on the knowledge of local partners about most of the spoken languages in the respective neighborhoods. However, at the same time it was also

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determined by the limited availability of certain languages as speech-to-text or text-to-speech modules of the Google Cloud API. The service provided by Google was chosen due to it's relatively low-level technical accessibility and the large number of languages available. Our time and financial framework did not allow for alternatives requiring further developer work or an extensive research and development process in this field. Being aware of the inherent biases (Prates et al. 2020), and since no direct personal data was transferred, we decided to still work with the Google API but focus on the limits of AI based translation, rather than seeing it as a problem solver.

Conversations with the square

Urban planning projects are often concerned with the design of public social spaces such as parks and squares. "Talk to Me" ties in with this practice and involves participants in a multilingual dialogue with "the square," connecting them to the urban space they are part of while they interact with the installation. A conversation with the square is initiated by a visitor pressing one of the bell signs. Each sign is assigned a language. Visitors make a choice by pressing the plate featuring the term "the square" in their preferred language.

The intercom (computer) then starts to speak as a personification of the square by greeting the person and initiating a dialogue about people's past activities according to a query logic:

> **Computer:** "Hello, what's your name?"
>
> **Visitor:** "(name)."
>
> **Computer:** "Hello (name), nice to see you. Tell me in two or three sentences what you used to like to do outside?"
>
> **Visitor:** "I used to meet friends and play ball at the roadside." (Example)
>
> **Computer:** "Thank you, (name). Your answer will now be printed out to share with others. See if I understood you correctly."

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Afterward, the person was asked to pick-up their answer at the other side of the gate, where it was printed in their original language, supplemented by a selection of four of the following languages: German, English, French, Turkish and Arabic.

In the development of the installation, it very soon became apparent that the Google Cloud API would not provide very accurate translations. Furthermore, ambient noise or speaking in a soft voice would lead to more errors in the speech recognition, which were passed on in the transcription into text and the subsequent process of translation. Because these errors could not be prevented within the scope of the project, it was decided to use these potential errors as an asset to engage people in dialogue with each other by suggesting to them to make corrections by hand and to ask for help with languages they didn't speak themselves (Fig. 3). The printouts were meant to act as a visual display of the dialogues and as an artifact to start conversations over ramifications of communicative misunderstandings. Those conversations could then lead to in-depth discussions about the neighborhood, to exchange of individual stories and experiences and, in purpose-built narrative spaces, to interviews and conversations about intercultural dialogue in the neighborhood or in urban planning (Seydel et al. 2021).

Fig. 3 Correcting the printouts. Design Research Lab.

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What are we talking about?

When conducting participatory processes in urban planning, citizens are usually approached with a specific subject or question, to which city representatives expect to receive concrete answers. However, based on interviews conducted with local initiatives in the beginning of the project, the research team decided to take a step back and use the first interventions on the ground to establish contact and initiate a conversation with city dwellers.

For this purpose, a narrative approach was applied: "Tell me in two or three sentences what you used to like to do outside." The question posed by the computer, on the one hand, tied into the past of the user, to gain insights into their different backgrounds. On the other hand, people were asked to share personal stories, which established awareness and acknowledgement for the importance of their experiential knowledge in urban planning processes.

Another aspect was the assumption that asking visitors a direct planning question – like "What changes would you like for this square?" – would lead to a very limited range of practical answers. Such a disappointing result would neither give credit to the complexity of developmental interventions into urban spaces nor would it leave visitors with a sense of social interaction. They would not feel woven into the social fabric on site with such a simple query. In all of the participatory formats created in the research project INTERPART, therefore, the intention was to signal an opening up towards citizens and neighbors, towards their implicit and tacit knowledge as experts of every-day life, towards different forms of communication, knowledge and people from different backgrounds, those who usually do not otherwise join in formalized participatory planning processes. An open mindset for direct and digital participation had to be communicated, transported and inscribed by means of all elements of the public intervention.

It is important to mention that, as design researchers, we were very well aware that participatory forms of design and research are not in and of themselves an efficient act in the quest for socially robust and more equitable outcomes. The question of participation in design has been at times overlooked or oversimplified (Pierri 2018). In our research over the last decade, we refer to the practice of participatory design as defined within the Scandinavian tradition of social movements during the 1970s. This differs from other traditional

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practice of collaborative design in many ways: It has a clear interest in issues of equality, social justice and participation, and exhibits a particular sensibility towards problems and complexities, rather than being primarily oriented towards (often oversimplified) solutions. The forms of participatory design and research we applied aim at reframing the role of expertise within knowledge production, and while not being against expertise in itself, they challenge experts as a source of power and authority (Schuler and Namioka 1993). In our project, we were particularly aware of questions of power relations in participatory research and how these questions are transformed during transdisciplinary research work.

Emotional involvement through a multilingual conversation

The installation, as an experimental and also poetical object for public intervention, attracted curious glances and motivated passers-by to inquire with interest what was going on in the squares. Different visitors emphasized the fact that their own language could be found on the interface as very positive. Listening to the digital voice in their mother tongue (often not the local language) in this unconventional setting had a deep impact: They felt valued and emotionally addressed and were touched by the fact that they could converse with a "machine" in their primary language. According to our fieldnotes, the installation was described as an "inspiring, playful format for dealing with language" (Participant observation Moabit, F. Schüffler, 4.6./p. 3).

Numerous visitors smiled at errors that occurred in communication with the machine, due to time delays or background noises. However, moments of frustration also occurred, especially when the speech recognition could not detect specific Arabic dialects. In one case, this led to a direct controversy between one participant and us. A young man was pretty annoyed because his name was just not correctly recognized by the machine. Others were amused by the wrong name recognition. What was planned as a playful interaction became a situation that stressed how very sensitive lingual misunderstandings can be. In this case it probably opened the floodgates to emotions of feeling marginalized and not recognized. In most cases, these comprehension and translation errors nevertheless led to an engagement with the tool and became (unplanned) occasions for conversations about personal experiences, and ultimately about exchanging ideas on neighborhood topics. The installation thus became the first

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point of contact for many participants in the interventions, a point of attraction and a conversation starter.

Just as on a regular intercom, most visitors did not leave long messages but answered rather briefly in short sentences. This was in many cases due to the unexpected interaction and the type of the initial question posed by the computer voice, but clearly also because of the lively situation on the square generally. The installation with the gate was more of a passage point than a place to linger. And yet, the short answers and notes were often rather personal and did start conversations, although they certainly were not usable for an in-depth analysis or have any representative implications. However, the installation drew participants into more focused co-research formats, such as our purpose-built narrative spaces on the square and workshop.

With the move from the open public space into inside do-research formats in the second part of the research project, "Talk to Me" was then further developed and detached from the gate construction. We transformed it into a smaller, more mobile object (Fig. 4). This second iteration of the installation, which could be held in two hands, allowed for a more intimate engagement with the artifact. Complexity was reduced by making the technology and the process behind the bells visible to users. While the technology remained largely invisible in the first version of the installation (during the public interventions), the second, small version of "Talk to Me" was meant to allow an integration of the artifact as an independent agent and co-equal participant within workshop settings – but also as a critical device (Raby 2001). Making the technology of the device transparent aimed at addressing questions of data security and the implications posed by using Google APIs, ultimately as means to politicize technology. Unfortunately, due to the COVID-19 pandemic, we were not yet able to implement and work with the later version of the artifact. However, the core idea of the installation remained the same: to create a hybrid, experimental participatory setting in which users could experience and engage with different aspects of technology while being situated in a research-specific, physical space.

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Fig. 4 Photo: Katrin Greiner.

Digital participation and the problem with the digital divide

The late 1990s were the pioneering times of digitized participation. Märker (2017) describes a back then new development project from 1998 in Bonn as the first approach to e-participation in Germany. Urban development plans were published on the internet in a "digital gallery," and an online forum was installed for citizens to comment on these plans. Simultaneously, discussion forums were held, and people were introduced to the new technology during public assemblies. While only three logins to the e-participation platform were registered back in 1998, hopes for participation were still high in these pioneering years. It is important to consider that this was the year Google introduced its search engine and the internet only had begun to become a mass phenomenon. In 2002, still less than 50% of German households had and used an internet connection, but numbers increased rapidly: Ten years later the share was up to 72% and grew up to 93% in 2017 (Eurostat 2017). Interestingly, the basic setup of the 1998 e-participation project in Bonn is still in use today.

More than 20 years after the first attempts on digital participation, digital communication is ubiquitous and considered one of the

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key driving forces of societal change. This mediatization of society and the ubiquitous digital transformation builds on the quantitative increase of global connectivity, but it has also brought massive qualitative changes to social and cultural life. The general modes of engagement with people and their surroundings have undergone radical changes in this development (Couldry and Hepp 2013; Hepp 2020). For a long time, the digital transformation was dominated by technological optimism, with promises of access, information, participation and of overcoming global inequalities. Experimental realms, co-operations and project-based interventions are clearly benefiting from the expansion of globalized ICT. But considerable research shows that individuals, communities and regions that are culturally, socially and economically marginalized benefit less from the digital transformation and often hardly participate digitally. This potentially leads to greater disadvantages and inequalities (Alam and Imran 2015; Ragnedda 2018; Eubanks 2018; Sloane 2019).

Despite the increasing application of digital participation in urban planning and development, many of the challenges generally faced in participation projects remain the same: Just like offline participation, online participation is socially selective. One major problem that has received little attention in the discussion on formalized digital participation is the digital divide (Cooper and Weaver 2003) which manifests itself on three levels:

- in access and equipment (internet connection, computer, smartphone),
- in knowledge regarding the use of and navigation through the digital,
- in the material and sociocultural advantages that occur to people with appropriate skills. (van Deursen and van Dijk 2018, 2)

One of the most important challenges to be addressed on different levels of design, policy and governance is to understand the digital divide, also on a global level, with its inherent structures of inequality and its severe social implications – as the current pandemic and the accelerated remote work have made more than obvious (van Deursen 2020). As summarized by Massimo Ragnedda (2018), a critical digital

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literacy is needed to adequately tackle key issues of participation and to address the growing digital divide at all levels.

Designing for digital participation and inclusion also means fostering discussion and negotiation about the ways in which digital technologies reconfigure our collaborative and working infrastructures. These public and multi-stakeholder debates are crucial to achieving a balanced view of the effects of digitalization in collaborative practices and urban planning – as a key factor for advancing digital literacy, democratic self-determination and empowerment within these areas. We understand digital literacy to not only stress competent navigation through the digital world but embrace the dimension of steering and designing processes of digitalization – as a form of critical, socio-politically embedded digital literacy. The skills required to achieve digital literacy are regarded here as an expanded concept towards more digital equality, with the focus on what people are effectively able to do – as an expression of their freedom and agency.

Holistic approaches to intercultural participation

The digital divide is closely linked to other socio-cultural and socio-economic factors – particularly with regards to household income. Age, gender, political interest and educational attainment also affect the use of digital media and with it digital participation in urban development (Hoffmann and Lutz 2019). When developing digital formats, therefore, consideration must be given to the advancement digital competencies and critical digital literacies through direct and personal interaction. The importance of participation in the context of designing physical *and* virtual public spaces is increasing, because digital participation is negotiated as a crucial factor for co-designing modern democracies. Thus, integrative approaches that combine offline events with digital platforms and online tools are now more often being implemented (de Jong et al. 2019).

When it comes to intercultural participation, the communicative and performative aspects of analogue and digital participation become even more important. This became especially apparent when in 2020, facing the pandemic, various areas of life had to be moved into the digital space within a short period of time. A few months into the pandemic, our research group talked to representatives of local initiatives and organization in Berlin Moabit who work with refugees and immigrant communities. These intermediaries' actions,

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their engagement and political role have been reconfigured by digital technologies. The possibilities of self-organization and participation have changed over the last decades, expanding the range and effectiveness of project makers and civil society initiatives, fueled by digital technologies that are almost ubiquitous in post-industrial societies. But still, their work usually involves a great deal of face-to-face encounters and personal engagement. Because these organizations depend largely on volunteer work and government funding, the sudden transition of all of their participatory formats into the digital space was particularly difficult. They described language barriers, limited access to digital technology and limited digital literacies (especially in the education sector) as the main challenges that prevent people from taking part in (virtual) public life. One representative reported that most educational information on infection risks and restrictions imposed by the government was only made available in German, and the language used was rather complex. This created a lot of uncertainty for the would-be immigrants he is working with. Others observed the limited capacity of parents to support their children created by the lack of access to technology and by language barriers faced in the context of homeschooling. Many of the housing facilities for refugees, for example, do not have internet access.

While the transition to online formats still helped intermediaries to stay in touch with their members, all the representatives stressed the importance of the design of these digital spaces: The design premises should be needs-oriented, based on trust and openness, or in other words, a fundamental intercultural sensitivity. In this context, intercultural sensitivity was described as a sensitivity to the specific realities of life and of different people living together in our society. The ability to put oneself in another's position in order to recognize specific conditions, prerequisites and acknowledge and appreciate differences. This requires a certain degree of flexibility, a quality that often positively distinguishes nonprofit organizations from state or other administrative institutions.

The experiences encountered by these organizations during the pandemic make the conceptual linking of different communication formats and channels all the more important. If digital participation is used as a democratic tool to involve cities' inhabitants in their development and thus in the shaping of their lives, the inequalities and

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exclusions created by participatory formats need to be considered when physical and digital spaces of participation are designed.

Creating interculturally sensitivity spaces can mean providing information in several languages and in language simple enough to ensure that everyone can reach the same level of understanding. In the same way, it means dropping ideas and projects if they do not address the needs and interests of the people for whom they are intended. All representatives of the four organizations the research group talked to emphasized that the basis of their work is always the interpersonal relationship. Fabian Thomsmeier of the organization Karame sums this up as follows: "Our core work here is the work on site, with the people" (F. Thomsmeier, Interview, June 24, 2020).

Cross-mediality as a conceptual approach plays a decisive role here. It combines on- and offline media and formats of exchange and dialogue. Both virtual and physical spaces of participation come with their own specific challenges, however, a combination of online and offline realms that build on and complement each other has the potential to promote intercultural participation: a bundle of activities that take into account different needs, individual resources and communication styles.

Conclusion

The social complexity in our post-migrant and post-digital society particularly challenges the lack of diversity in urban participation. Countering inequalities as well as deterministic technology-driven perspectives on societal challenges, especially in times of crisis, is one main task within participatory design and research. As a result of our endeavors, we can say that the interactive artifact presented here and the designed situations around it triggered learning and thinking processes among both the researchers and the participants. Our experience with the chosen formats of a hybrid artifact and broadly inclusive participation shows how important the design of such participatory situations can be. With the help of a design that is open to conversation, previously marginalized groups can better engage in participation situations in which they find room to formulate their perceptions, opinions and needs. This is primarily about the attitude that goes hand in hand with the design of participation spaces and situations.

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The design of physical objects, reference systems and processes has a significant influence on whether and how individuals or groups can exchange information, engage and trigger an intercultural dialogue. The socio-material and socio-technical arrangements (Latour 1999; Ehn 2013), i.e., the composition and interplay between people and their material and digital environments, influence real-world contexts and thus the way people act and interact. It is thus all the more important to advance public debate on who is taking part in shaping our digitally mediated societies and how the participation processes are designed, e.g., to foster discussion and negotiation about the ways in which (digital) technologies reconfigure our realities. Through the lens of digital sovereignty, in fact, questions of critical digital literacies as well as the skillsets that people need in order to understand, navigate and shape digital realms become a main aspect of concern. While digital technologies support individuals and communities in organizing, networking and bolstering commonality – and thus promote participation generally –, it has become certain that both local governments and civil society actors must face up to the challenges of the digital divide and digital literacy to adequately address important questions of equity and participation. The question of the impact digital technologies have in fostering diverse participation, inclusion and engagement by more marginalized groups emerged as a critical one for our project, wherein the role of design can be considered ambivalent. The discipline of design has a key role to play in revealing the negative impacts of technology. It can also address what shape technologies may take, what is made explicit and what is not, what is possible and what is not, who has access and benefits from them and who is left out. For all these reasons, we recommend that the questions of how to grasp these issues should be addressed jointly by academic researchers from different fields of knowledge, as well as practitioners and activists within the fields of urban planning and digital participation – as practiced in transdisciplinary social living labs. The opening arguments on a wider notion of sovereignty stress the importance of design for digital participation and inclusion. A design approach that frames digital sovereignty as a performative practice and which requires constant deliberation, re-negotiation of rights, assessments of risks, opportunities and capabilities (Pierri and Herlo 2021).

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Why Feminist Digital Policy Matters

Francesca Schmidt

Progressing digitalization is restructuring society. Nevertheless, existing dominance and power structures – including in the shape of sexism and racism – manifest themselves in technologies, algorithms and the use of media in the process. The aim of digital policy is to establish a regulatory framework for the digital transformation of society. Ideally, this should lead to a strengthening of the positive, emancipatory aspects. In academic circles, digital policy has been a topic of discussion since as early as the 1990s. However, this separate policy and legal area still tends to be a less familiar topic among the broader public – despite civil society initiatives long having called out the need for a certain level of regulation. With regard to the digital public sphere and social networks in particular, the calls for regulation have since grown very loud in the media and have, in part, also resulted in the adoption of policies. That being said, the number of active citizens quickly narrows when it comes to copyright matters outside of cease-and-desist lawyers or data flow monitoring.

To put it simply, digital policy relates to the interplay between internet governance and internet policy, i.e., (international) regulations and frameworks (Working Group on Internet Governance 2005), on the one hand, and legislation that has been specifically established or needed to be adjusted to the digital environment (Braman 2011),

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on the other. This interaction affects all four of the aforementioned thematic areas.

At its core, digital policy addresses and politicizes the following four broad thematic areas: 1) access to the internet, 2) access to content, 3) copyright, and 4) data protection and privacy (Braman 2011). In the meantime, the digital public sphere is being touted as the fifth broad thematic area (Ganz 2013). Digital policy thus concerns a policy for the internet. The digital policy area is, in the context of the German-speaking world at least, not significantly impacted by feminist approaches. From a policy perspective, i.e., above all in the sense of being enshrined in parliament, digital policy is, in fact, still evolving (Greef 2017; Reiberg 2018; Schröder 2012). Hence, my aim is to put forth and spell out feminist contributions and standpoints.

Digital policy requires an intersectional, feminist perspective, i.e. a viewpoint that both analyzes and critically appraises how forms of discrimination based on gender, social background or *race*[1] are interconnected with new technologies and digital cultures. The term "intersectionality" was coined by Prof. Kimberlé Crenshaw in 1989 in her essay "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics." Citing three legal proceedings, she illustrates the mechanisms that render impossible any recognition by the courts of specific forms of discrimination experienced by Black[2] women. In all three proceedings, Black women were either denied being representative of all women, or the combination of *race* and gender – in this case of Black and female – was not recognized as being a discriminatory fact (Crenshaw 1989).

I want to contribute to the research and activism environment of feminist digital policy by adopting an intersectional perspective and, through digital violence and surveillance, illustrate what gender-based structures of discrimination and disadvantage at the interface between *race* and social background currently exist in the digital culture: What feminist perspectives are the result of reshaping digital

1 The term "race" makes it possible "to evade the implicit biologism and fascist connotations of the German word" (Dietze 2013, 29). It furthermore refers to the tradition of critical appropriation (cf. Lepold and Mateo 2019).

2 The term "Black" is capitalized throughout to illustrate the inscribed resistance potential of People of Color and Black people (cf. Eggers, Kilomba, Piesche, and Arndt 2005).

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policy and rebalancing the ensuing debates surrounding it? How can digital violence be regulated and why is this urgently necessary in order to comprehend the nature of the change that the relationship between the private and the public spheres is subjected to. Surveillance is another issue that is ideally suited to illustrating the feminist, intersectional perspectives of structures of suppression and discrimination and thus exemplifying that the desire for security and control over one group leads to surveillance and restriction of the other. The realms of digital violence and surveillance are of relevance to feminist policies and can be found in multiple thematic areas of digital policy. As a consequence, both the digital public sphere and access to the internet and its content are areas of significance to the regulation of and discursive negotiation concerning digital violence. By contrast, surveillance focuses on access to content and/or on data protection and privacy, though this field of application also deals with matters concerning access to the internet in general as well as the digital public sphere. Both of these practical examples illustrate the interwoven nature of these areas as they relate to feminist digital policy.

Here, regulation is not limited to the enforcement of laws, i.e., bans. Digital and technological advancements pose challenges to regulatory policy as "the control of society through regulative politics, i.e. by means of the establishment, monitoring and sanctioning of general rules, [proves to be] highly presuppositional – especially when the contents of regulations are politically controversial, have to adapt quickly to changing problem situations, and compliance with them is difficult to monitor" (Czada, Lütz, and Mette 2003, 13). Moreover, regulation can not only mean enforcing laws through a bureaucratic implementation of rules. Otherwise, laws will always come across as a barrier to development. "[W]hen science and technology produce new problems and solutions, [the law is unable to keep up] – unless it got in the way of that development" (Ibid., 14). A feminist perspective on digital policy must also be aware of the ambivalences associated with the current, pressing call for the state to intervene with regulatory action. Even though such a call – triggered by (digital) patriarchal violence – is understandable, the question remains as to whether (patriarchal) violence can be combated through equally violent structures, such as sanctions.

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Feminist digital policy and intersectional feminism

Which understanding of feminism can be based on a description of feminist digital policy? Feminism, which, at its core, is historically seen as gaining equality of women and men by abolishing the patriarch as a structuring element of gender injustice, has grown enormously and, at the same time, changed in the wake of queer and intersectionality theories. As a subject, the "woman" – especially in the wake of digitalization – is no longer the undisputed actor at the center of feminist struggles (Butler 1990; 1993). It is perceived either as a process (doing gender [Gildemeister 2008]) or intersected with diverse differences (intersection [Crenshaw 1989; Puar 2011; Walgenbach, Dietze, Hornscheidt, and Palm 2012]). Even though these approaches can only be merged into one dialogue to a limited degree, my belief is that it is vital to avoid essentializing settings related to the feminist subject and labelling specific and, in this sense, specifically interlacing categories of order spawned by biases. Gender, or rather woman, and the associated forms of discrimination therefore are no longer the sole focal point of the analysis. Rather, it entails linking the gender category with other categories such as *race*, gender identity or age, thus keeping tabs on all forms of discrimination. The starting point is therefore intersectional power relations that unequally dole out privileges and biases – not only on the basis of gender. In terms of digital policy, this can mean that, in order to develop targeted strategies, it is not enough to say that women have less access to the internet or have been more impacted by digital violence as a group. Rather, it is about fleshing out which women are affected by which other discrimination attributes. Continuously providing such an intersectional, feminist perspective will not always be possible, for one thing because of a lack of corresponding data bases. However, the aspiration remains the same.

As a policy area, digital policy has yet to be assigned to a ministry in Germany as a primary bargaining space despite the appointment of Dorothee Bär as Federal Government Commissioner for Digitalization. Much like other policy areas, such as environmental policy, digital policy is characterized by movement-political linkages. A look into the history of the internet shows that efforts to politicize and regulate the issue – by civil society as well as business and politics – have been furthered from the beginning, even though their interests in doing so were divergent.

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Feminist digital policy and cyberfeminist history

In response to the exclusions, but also ever since the inception of digitalization, digital feminists have used the potential of the Net as a means of discussing and politicizing feminist matters on precisely this platform. As important as their engagement may be, I seek to shift the emphasis. In the following, I will draw a line between digital feminism[3] and feminist digital policy or digital policy with feminist perspectives. A multiplicity of digital feminists does politics through the Net. Feminist digital policy does politics for the Net. The former use the internet as a tool; the latter concern themselves with the (physical) structures of the internet, the associated forms of gendering, and the impacting emancipatory policies.

Back in the early 1990s, it was Judy Wajcman who called attention to the impact of technology on gender relations in the area of work and on gendered technology as such (Wajcman 1991). In the German-speaking world, there have been numerous examinations of the relationship between women and information technology. This occupational area used to be dominated by female specialists who, as this field has grown in influence and profitability, have taken a backseat since the 1990s and been replaced by men (Becker-Schmidt 1994; Höfels 2001; Hoffmann 1987; Roloff 1993; Schelhowe 1990). Furthermore, this era increasingly saw the emergence of cyberfeminist groupings who, in their disparity, have further opened up the internet as a bargaining space for a feminist confrontation with technology. These have been both artistic/activist in nature (Critical Art Ensemble 2020; Old Boys Network 1997; VNS Matrix 1991; 1996) and science-oriented (Braidotti 2002; Fernandez 2003; Haraway 1991; Plant 1997; Stone 2016; Wilding 1998). One major finding of cyberfeminism advocates was that the internet "is not a utopia of nongender; it is already socially inscribed with regard to bodies, sex, age, economics, social class, and race" (Wilding 1998, 9). In recent years, in particular, this intersectional feminist confrontation with power relations and technology has continued to be intensively pursued. With regard to biased algorithms, i.e., automated decision-making processes, it becomes apparent that relations of violence and inequality are frequently part and parcel of the system, and thus part of the technology

3 For more information on how digital feminist issues and modes of expression are categorized in media science, compare Kohout (2019).

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(Buolamwini and Gebru 2018; Noble 2018). But intersectional debates are also being held on gendered and racialized internet access, on representation and technology. They also allude to the fact that reflecting on *race*, critical whiteness studies, intersectionality (Noble and Tynes 2015) and Black cyberfeminism (McMillan Cottom 2016) can greatly contribute towards the field of internet studies not remaining shackled by the spectacle of *the Other* and thus disavowing the racism that exists (Daniels 2013). Within the realms of visual cultures, Lisa Nakamura states that the internet is indeed a place for Black women or Women of Color for their own *race*-related, ethnic or gender-specific visual and virtual cultures (Nakamura 2008). Shortly thereafter, she takes things a step further in her collaboration with Peter Chow-White (2012) by maintaining that the infiltration of digital media as a way of thinking and knowing, and as a format for producing and consuming information, forces us to rethink our understanding of *race* both in digital and analogue media by broadening the spectrum beyond issues of access and representation (Nakamura and Chow-White 2012). To me, feminist digital policy thus represents a key addition to and, above all, a further development of cyberfeminism and digital feminism, not an alternative to them.

Feminist digital policy and the public sphere

As a fifth major thematic area, the digital public sphere introduced by Kathrin Ganz (2013) in her study on feminist digital policy takes on a special role. Because both the digital public sphere and the resulting shift in the public realms as well as the relationship between the private and the public spheres are bargaining spaces for digital violence. Digital violence illustrates not only a shift in how public spheres are comprehended in relation to the private sphere but also reveals the potential for structural discrimination in areas where access is an issue.

Relations of violence and inequality appear to manifest themselves on the internet as if through a magnifying glass. Feminist research has, as far back as the early 1990s, described trolling as the conscious disruption of communication (Herring 1997). Soon thereafter, the political and legal discourse centers around the issue of regulating digital violence (Citron 2014; Hentschel and Schmidt 2014; Lembke 2018), which subsequently also always constitutes a regulation of communication, a contentious issue in feminist

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circles (Schrupp 2011). The communication discourse revolves around changing the relationship between the public and private spheres that is taking place in the course of digitalization. Whereby, on the one hand, it is suggested that spaces for feminist engagement are opening up and can ultimately unfold a discursive force (Drüeke and Klaus 2014; Drüeke and Zobl 2013). On the other hand, it is precisely such an opening, the digital public sphere and/or the increasing desire for *low privacy* (Heller 2011; Jarvis 2011; mspro 2011), which poses a danger to vulnerable subject positions, whether through increasing surveillance or digital violence. Within the realms of feminist digital policy, seen as a policy for the Net, there is currently only one study, by Kathrin Ganz (2013), that opens up this field, though it does not delve deeply into the fields of application. I intend to follow up on this and illustrate new aspects.

Let's take another look back in time. The internet was once associated with the liberation of gender norming, racialization or homophobia. In the "new" world of cyberspace, restrictive and one-dimensional categories were no longer supposed to play a role (Barlow 1996; Draude n.d.). John Perry Barlow ended his "Declaration of the Independence of Cyberspace" of 1996 with the sentence: "We will create a civilization of the Mind in Cyberspace. May it be more humane and fair than the world your governments have made before" (Barlow 1996). The notion that the internet was a space where categories such as gender, *race* or class would no longer play a role – and which, in this regard, would neither require any specific structural analysis nor should it undergo any regulation – came from the very same group with the most privileges and the fewest experiences with structural discrimination: white, heteronormative men. To a certain extent, the notion of a neutral technology was directly carried over into cyberspace. According to this logic, from such supposedly neutral frameworks, only neutral living conditions could possibly emerge. 25 years later, it is becoming increasingly apparent that, more than anything, market "civilization" (DiGiacomo 2016; Fuchs 2018; Srnicek 2016) rules. Moreover, digital violence (Brodnig 2016; Citron 2014; Ganz 2019; Hentschel and Schmidt 2014; Nakamura 2015; Van Der Wilk and Natter 2018) and the exercise of state power via surveillance increasingly dominate the internet (Fuchs, Boersma, Albrechtslund, and Sandoval 2012; Tufekci 2014; Zuboff 2018).

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At the same time, the internet enables democratization processes or social debates to be set in motion. The uprisings in North Africa in 2010 and 2011 are an example of this. Using social media and internet-based applications, which primarily served to communicate, collaborate and to exchange information, people were able to successfully mobilize and help topple regimes (cf. Antonakis 2015). Another example is the ongoing #MeToo hashtag campaign. The hashtag #MeToo has sparked a worldwide debate on sexualized violence and everyday sexism from which mostly women suffer. This debate is currently translating into first concrete measures: many of the largely male abusers have been dismissed (Carlsen et al. 2018); a support center for victims of sexual abuse in the creative industry has been awarded funding by the German Government Commissioner for Culture [German Government Commissioner for Culture and Media (BKM) and founding members of the association *Vertrauensstelle gegen sexuelle Belästigung und Gewalt* 2018]. The potential that the internet can still unfold despite of all prophecies of doom becomes apparent here.

Feminist digital policy and digital violence

The acknowledgement of violence against women, be it mental or physical abuse, is one of the successes of the women's movement of the late 20th century. Hence, there is a comprehensive, theoretical examination of this topic available (Dackweiler and Schäfer 2002; Geiger 2008; Hagemann-White 1992; 2002; Sauer 2011). Violence occurs in many forms and places but is never random. It runs its course alongside power and discriminative structures and affects some groups more than others. Digital violence acts in much the same way, the difference being that – unlike sexualized violence, which primarily takes place in domestic surroundings – it largely occurs in the public sphere, i.e., in forums, on social networks, in commentaries under online articles (even though domestic, sexualized violence is also increasingly spreading into the digital space). What's more, this form of violence is typically personified. That being said, comments such as: "You're nothing but a dumb slut that pisses out their mindless drivel along with their army of commentating whores. Get a job, you fucking cow!" (hatr.org 2011) impact the entire group. This quote will be the only verbatim example of its kind as I do not wish to afford such violence any more attention than it deserves. However, it is also necessary to

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cite such a level of articulated violence at which we currently find ourselves. Digital violence, in its various manifestations, has, unlike domestic violence, a public bargaining framework that extends beyond the personified level. Or, to put it another way: the digital public sphere is the bargaining space for digital violence. At the same time, digital violence represents the mechanism that produces exclusions within the digital public sphere. One of the tasks of the (digital) public sphere is to establish a democratic public sphere that can help shape policies through discussion. Although it also lives off the bargaining space of the digital public sphere, digital violence impacts the level of participation in precisely this democratic public sphere and can lead to exclusions (Drüeke and Klaus 2014; Eckert 2018; Ganz 2013).

The technological means to disseminate sexism, racism, anti-Semitism, homo- and transphobia, to name but a few of the structures of discrimination and violence, present a regulative society with new challenges. Spam mails and bots strongly impact public culture. Murder and rape threats, which primarily affect (BIPoC) women, LGBTIQA+ persons, and people in other minoritized positions, have not only intensified but also transformed in terms of the quality of such threats: compressed into 140 characters, distributed through algorithms, at times randomly directed (Amnesty 2018a; 2018b; Poland 2016; Citron 2014).

A community-based approach that seeks to combat digital violence not through legislative norms but by applying jointly negotiated rules restricted to the platform in question greatly depends on who is a member of such a community and its power structures. The example of Wikipedia shows that a community extensively comprising well-educated, white males (Doyle 2009) will indeed not necessarily aspire the critical analysis of the patriarchal knowledge structures. But also, market economy interests prop up patriarchal heteronormative values.

This predicament has since been acknowledged by legislators and addressed through the Network Enforcement Act (*Netzwerkdurchsetzungsgesetz*) in Germany. That being said, this legislation promotes the increasing privatization of the enforcement of laws, which must be viewed critically from a feminist perspective, as it will, at the very least, be in close keeping with market economy logic.

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From a feminist perspective, it would therefore be expedient to consider collectivizing legal mobilization and the enforcement of laws and to kickstart this through political initiatives. In this context, this means the right to pursue representative action (*Verbandsklagerecht*) and the possibility of pursuing class action. Class action is currently not permitted in Germany but would enable those affected by digital violence to shoulder the not inconsiderable resource burden involved in civil cases across multiple participants. The structural nature of digital violence would furthermore become apparent. Representative action would give rise to the possibility of ending structural discrimination.

Rights- and community-based approaches must work hand in hand in order to bring this struggle to a successful conclusion. In spite of everything, the fact remains, for the time being, that the cited groups endure structural discrimination and violence. This generates exclusions that can potentially entail the loss of work, mental illness, or even self-imposed exclusion from the internet. For a democratic, socially oriented society, this represents a process that is blatantly dangerous as it actively excludes people from participation. After all, democracy means participation.

Feminist digital policy and surveillance

The second example is surveillance, which, through the technological developments of the past 50 years, has undergone a shift from entirely person-based surveillance to context-based surveillance. This means that locations (e.g., through video surveillance or radio cell intercepts), specific time periods (at demonstrations; before, during, and after major social events), specific groups of people (for example, through racial profiling) or networks (of people or social networks on the internet) are also on the radar. Surveillance primarily serves to safeguard patriarchal, white masculinity. It must not be allowed to become an end in itself or the standard for governmental action. Today, every individual is potentially subject to surveillance, but the impact on each person is very different. Here, too, prevailing discrimination and racialization structures play a significant role. Accordingly, while it is certainly meaningful to examine and/or expound this from the perspective of the right to privacy, this should not remain the only one. At the same time, we see that both the state and private enterprises continue to repeatedly undermine the right to informational

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self-determination. This specifically impacts those with a particular need for protection, such as refugees or social welfare recipients. Here again, feminist digital policy can and must be employed, as the right to privacy is universal and any heightened dependency on the state must not be allowed to be turned into an abuse of power in this area.

The surveillance of social media by the state, platform operators and by users (Andrejevic 2002) illustrates how widely cast these nets have since become. On social media in particular, there are indications of the close correlation that exists between surveillance and digital violence for some, especially women and those in marginalized positions. Because this is the space where feminist activism takes place and equally where it is subjected to an increased level of surveillance and violence (Nakamura 2015).

Not to forget that we frequently leave our personal data on the internet voluntarily, which then becomes part of the much-discussed big data pile. We need to be aware that this data is evaluated with the help of algorithms and, in some instances, new relations of them were created which, in turn, can impact our lives (Boyd and Crawford 2012; Gless 2016). Will we get that apartment or loan? How high will my health insurance premium be in the future if the insurance company learns how often I purchase food online that is classified as unhealthy?

Feminist digital policy for a change

Algorithms create norms and rules that are initially based on (outdated) data, which is riddled with discrimination of all kinds. As a result, it tends to exclude and discriminate against people in certain positions, such as (BIPoC) women, LGBTQIA+ persons and Blacks. Calls for transparency and ethics when designing algorithms should also be a matter of interest to feminists. Here, a feminist perspective on digital policy can identify the consequences of these forms of discrimination on persons affected and the impact that they will have for the future. But it can also enrich the debate by providing solutions such as anti-discrimination legislation for algorithms.

Feminist digital policy must therefore address the structures through which dominance is perpetuated and any use of the internet is influenced – emancipatory policies included. It should therefore be of feminist interest to focus on (ongoing) structures of discrimination

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and dominance from the very beginning and to develop alternatives and not only turn the screws in hindsight through an internet policy. Or, to quote Audre Lorde: "The Master's Tools Will Never Dismantle the Master's House" (Lorde 2018). Sticking with this metaphor, the house should therefore be intersectional and feminist.

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Researchers Gone Wild

Origins and Endpoints of Image Training Datasets Created "In the Wild"

Adam Harvey and Jules LaPlace

Abstract

Face recognition and biometric research are contributing to rapid growth in new biometric surveillance technologies. But many of the datasets used for these technologies rely on media collected from non-consensual, nonregulated sources. Researchers refer to this media as being "in the wild." This analysis examines the widespread and largely unregulated use of images "in the wild" that were captured from campuses, CCTV camera feeds, social media, celebrity databases, and by scraping internet search engines. The findings presented here show that millions of individuals have unknowingly been used for training face recognition and other biometric analysis algorithms in both academic and commercial applications. Data compiled for this project, along with more in-depth analyses for each dataset, is available on the research project website https://megapixels.cc [https://exposing.ai/].

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Overview

Image training datasets are an essential technical component of artificial intelligence (AI) that often operate out of sight. Without sufficiently large datasets to train on, AI could not compute anything. As Chris Darby, president and CEO of In-Q-Tel (C.I.A.'s strategic investment firm) has stated: "[A]n algorithm without data is useless" (Darby 2019). Geoffrey Hinton describes the importance of datasets as central to understanding new forms of computation. "Our relationship to computers has changed" Hinton says. "Instead of programming them, we now show them and they figure it out" (Hinton 2017). Kai-Fu Lee claims that "AI is basically run on data" (Lee 2019). The new logic is not better algorithms; it is better data, and more data. "The more data the better the AI works, more brilliantly than how the researcher is working on the problem" says Lee. But if data is the bedrock of AI systems, the foundation should be solid. Instead, many of the datasets currently used to train, test and validate face recognition and other biometric surveillance technologies are built on an unstable foundation of data collected without consent or oversight. Researchers call this approach "in the wild," referring to the assumed

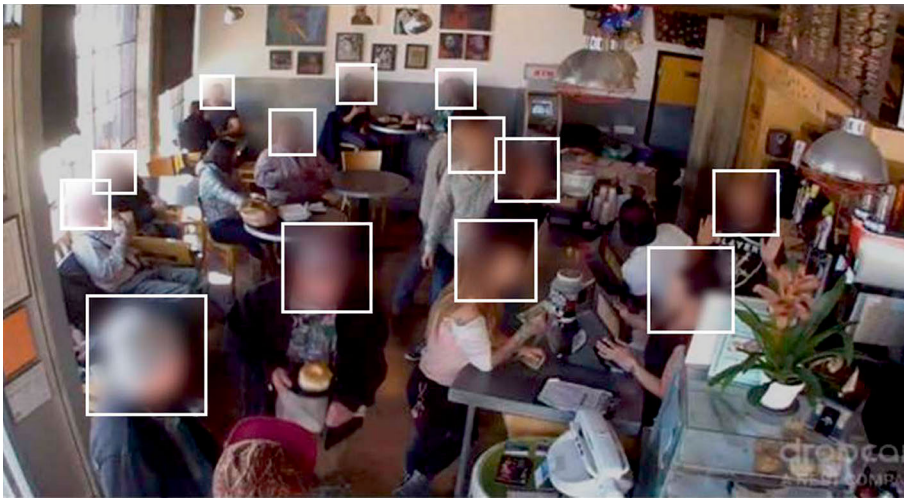

Fig. 1 A still frame from the Brainwash dataset created by researchers at Stanford University that was later discovered in a research paper linked to a foreign military organization.

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natural or unconstrained quality of the data. This research examines where these datasets originate and where they are being used. In response to this research, several dataset authors have retracted or stopped distributing their datasets, deleted websites or issued formal apologies for ethical breaches in their data collection methods. A list of retracted datasets with more information is available on the MegaPixels project website.

Background

Within the field of AI, face recognition is one of the most concerning applications. In the United States, over a dozen cities have now banned face recognition, citing civil rights concerns and the potential for abuse by law enforcement agencies. Face recognition technologies are also disproportionately more threatening because of the decreased accuracy for minority racial groups (Burton-Harris and Mayor 2020; Grother, Ngan, and Hanaoka 2019), reflecting the biased data they were trained with. Several researchers have addressed the former issue by creating more diverse face datasets, and companies have responded by pledging to address this bias with algorithms that learn more from underrepresented classes. But another issue remains: How are these datasets being created, and is anyone consenting to being used for biometric research experiments?

This answer requires a collective voice, as face recognition algorithms are a collective technology that requires millions of faces from millions of people. Determining the similarity of one person to another requires the encoded knowledge of multiple identities. A face recognition system's utility is its capacity to understand the difference between a theoretically limitless variety of biometric appearances. But this assumes a limitless pool of training data and a complementary scale of computational power. In reality, resources are limited. Academic researchers seeking to participate in the field of face recognition or face analysis have long sought open, shareable resources to innovate new ideas. In the United States, where a significant amount of academic facial recognition research was funded as a response to the 9/11 attacks, universities lacked access to datasets, which were critical to advancing research. According to the authors of FERET, the first public face recognition benchmark, "[t]wo of the most critical requirements in support of producing reliable

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face-recognition systems are a large database of facial images and a testing procedure to evaluate systems" (Phillips et al. 1997).

In 2007, a landmark face recognition benchmarking dataset called Labeled Faces in The Wild (LFW) (Huang et al. 2008) was first introduced to address these requirements. LFW is based on a previous dataset collected in 2003 called "Names and Faces in the News" that contained half a million captioned news images from Yahoo! News (Berg et al. 2004). The LFW dataset includes 13,233 images from 5,749 individuals. According to an article on BiometricUpdate.com, a popular site for biometric industry professional, LFW eventually became "the most widely used evaluation set in the field of facial recognition" (Lee 2017). The success of the LFW face dataset helped catalyze and normalize the trend for "media in the wild." Over the next decade, researchers replicated their success in dozens more datasets.

At the same time, corporations were amassing far larger face datasets, but these were off limits to academic research and public benchmarks. Google reportedly built an internal dataset of over 200 million images and 8 million identities, while Facebook has over 500 million images from 10 million identities (Bansal et al. 2017). Engineers and researchers who were locked out of the proprietary data sources controlled by corporations or government agencies sought alternative data collection methods to make face recognition research more widely accessible. This led to the surge in the usage and development of biometric datasets created "in the wild" that could be used for both training and public benchmarking.

Methodology

To understand how this shift in data collection has evolved, our research developed a system to categorize, track and visualize datasets by analyzing and geocoding the research citations associated with each dataset. Rather than rely on the researcher's initial intended purpose and purview to understand how a dataset is impacting society, our analysis reframes datasets as a biometric commodity in a global information supply chain. Our research maps the transnational flow of datasets that power a growing crisis of biometric surveillance technologies.

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The geographic information for each dataset is inferred by using the author's stated affiliation in the front matter of publicly available research papers. Typically, a research paper is published coinciding with the release of a new dataset. This becomes the starting point to then analyze the geographic metadata in other research publications that cite the original work. For each dataset, hundreds or thousands of PDFs are located and then manually reviewed to verify whether the researchers would have needed to download the data in order to conduct their research. Specifically, we look for researchers using datasets as part of a research methodology, including as training, fine-tuning or verification data. Research papers are omitted that only mention the dataset in passing as related research, or which purely cite methodology in the original paper such as algorithms or pre-trained models, because this does not prove that the researchers acquired the images. Because our geocoding method makes an

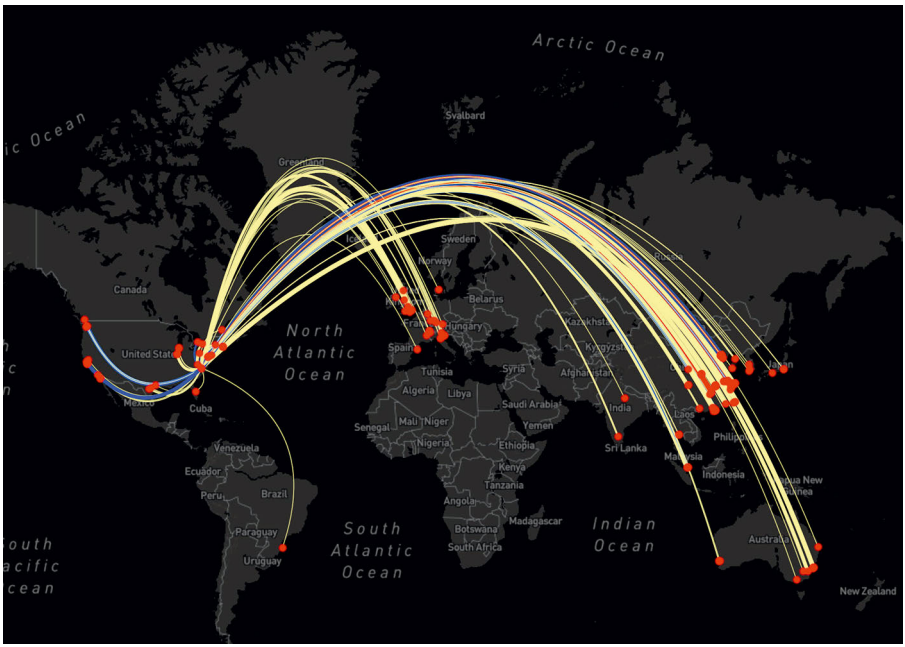

Fig. 2 A visualization of the inferred usage locations for the Duke MTMC datasets. The data originated at university campus in North Carolina and eventually became one of the most widely cited training datasets for building surveillance technologies.

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assumption that each researcher has self-reported the correct organization, and that they were operating at that location during the time of their research, the inferred geographic data should be understood as a proxy for revealing the global trends associated with a particular dataset, with each point on the map understood as a confirmed usage but in an approximate location.

Next, the verified set of research papers are again reviewed for insights into the types of organizations using the data. As an example, we applied this methodology to a dataset created from a cafe in San Francisco called Brainwash (Stewart, Andriluka, and Ng 2016). The dataset was created by a researcher at Stanford University who recorded the cafe's livestream with the help of AngelCam.com and then used it to create a head detection dataset. Publicly available research uncovered during our analysis showed that images from the cafe in San Francisco were eventually used by the National University of Defense Technology in China, a military research organization affiliated with the People's Liberation Army. As a result of our investigation, the dataset was terminated by Stanford University, which triggered mainstream media articles cautioning against this type of rogue data acquisition (Metz 2019). Brainwash is one example among hundreds which are being analyzed and published on our research project website megapixels.cc that follow a similar trend.

Datasets "in the wild"

Among the hundreds of other datasets created in the wild, over a dozen inherit the same nomenclature of the popular LFW dataset. An illustrative but non-exhaustive list of datasets using "in the wild" in their title include "300 Faces In-the-Wild," "Affect in the Wild Challenge," "Annotated Faces in the Wild," "Annotated Facial Landmarks in the Wild," "Appearance-based Gaze Estimation in-the-Wild," "Biased Faces in the Wild," "Caltech Occluded Faces in the Wild," "Cross Pose Labeled Faces in the Wild," "Disguised Faces in the Wild," "Expression in the Wild," "Faces in the Wild," "Families in the Wild," "Grouping Face in the Wild (GFW) Dataset," "High Quality Faces in the Wild," "HUST-LEBW Eyeblink in the Wild Dataset," "ibug Deformable Models of Ears In-the-Wild," "In-the-Wild Child Celebrity," "Labeled Face Parts in the Wild," "LAOFIW – Labeled Ancestral Faces in the Wild," "Makeup in the Wild," "Person Re-Identification in the Wild," "Racial Faces in the Wild" and "Valence and Arousal Estimation In-the-Wild."

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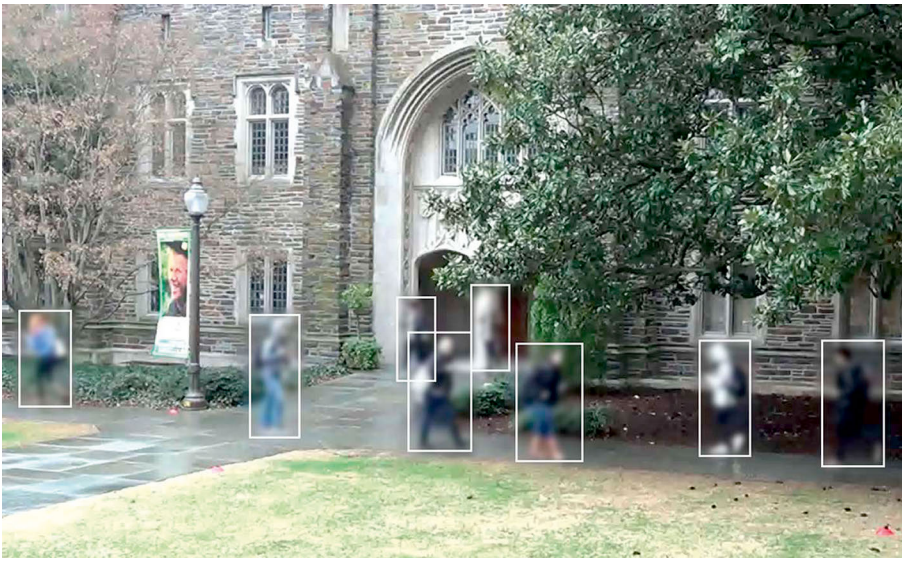

Fig. 3 A collage of images from Duke MTMC dataset recorded at Duke University without consent from the students.

Datasets make reference to their predecessors, using similar format for the files and annotations. But every dataset is unique and custom-made. There is no standard way data is collected or represented in a training dataset. And because dataset usage changes over time, an existing dataset might transform into a new dataset by being edited, re-annotated or combined with other sources. Instead of grouping the datasets by their initial intended applications or formats, which are unstable over time, we use their origin as a taxonomy for classification, broadly grouping the datasets into four themes: campuses and universities, CCTV or livestream feeds, social media, celebrity databases and web scraping.

Campus images of students

Images of students collected on campuses appear frequently in unconstrained datasets "in the wild." In the United States, several datasets were discovered that exploited campuses as a source of training data.

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Duke MTMC

In 2016, a researcher at Duke University in North Carolina created a dataset of student images called Duke MTMC, or multi-target multi-camera. The Duke MTMC dataset contains over 14 hours of synchronized surveillance video from eight cameras at 1080p and 60 FPS, with over 2 million frames of 2,000 students walking to and from classes. The eight surveillance cameras deployed on campus were specifically set up to capture students "during periods between lectures, when pedestrian traffic is heavy" (Ristani et al. 2016). The dataset became widely popular and over 100 publicly available research papers were discovered that used the dataset. These papers were analyzed according to methodology described earlier to understand the endpoints: who is using the dataset and how it is being used. The results show that the Duke MTMC dataset spread far beyond its origins and intentions in academic research projects at Duke University. Since its publication in 2016, more than twice as many research citations originated in China as in the United States. Among these citations were papers linked to the Chinese military and several companies known to provide Chinese authorities with the oppressive surveillance technology used to monitor millions of Uighur Muslims.

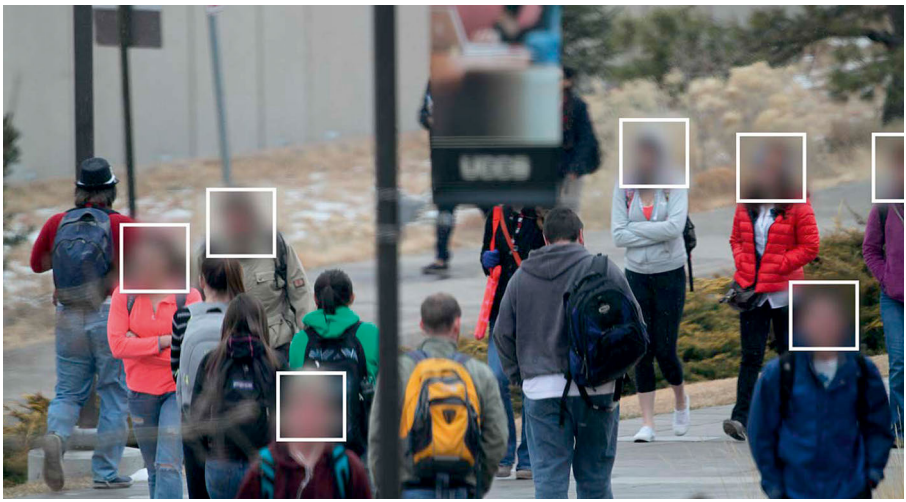

Fig. 4 A collage of images from UCCS dataset where students were photographed with a long-range camera without their awareness and used for facial recognition experiments.

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In one 2018 research paper jointly published by researchers from SenseNets and SenseTime entitled "Attention-Aware Compositional Network for Person Reidentification" (Xu et al. 2018), the Duke MTMC dataset was used for "extensive experiments" on improving person re-identification across multiple surveillance cameras, with important applications in suspect tracking. Both SenseNets and SenseTime have provided surveillance technology to monitor Uighur Muslims in China (Mozur 2019).

Despite warnings that the authoritarian surveillance used in China represents a humanitarian crisis (Watch 2019), researchers at Duke University unknowingly continued to provide open access to their dataset for anyone to use for any project. As the surveillance crisis in China grew, so did the number of citations with links to organizations complicit in the crisis. In 2018 alone, there were over 90 research projects happening in China that publicly acknowledged using the Duke MTMC dataset. Among these were projects from CloudWalk, Hikvision, Megvii (Face++), SenseNets, SenseTime, Beihang University, China's National University of Defense Technology and the PLA's Army Engineering University, several of which have been added to a trade blacklist by the United States Commerce Department.

In response to our research and joint investigation with the Financial Times (Murgia 2019), the author of Duke MTMC terminated their website. The local student newspaper then published several articles about the issue, and the author responded with a formal apology to the student body, admitting that the dataset was a violation of Duke's ethics standards.

The UnConstrained College Students dataset

A similar story occurred at a campus in Colorado where university faculty used a long-range high-resolution surveillance camera and photographed students without their knowledge for a face recognition benchmarking dataset called UnConstrained College Students (UCCS).

The UCCS dataset includes over 1,700 unique identities of students and faculty walking to and from class. The photos were taken during the spring semesters of school year 2012–2013 on the West Lawn of the University of Colorado, Colorado Springs campus, using a Canon 7D 18-megapixel digital camera fitted with a Sigma 800mm F5.6 EX APO DG HSM telephoto lens, pointed out an office window

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across the university's West Lawn. "The camera [was] programmed to start capturing images at specific time intervals between classes to maximize the number of faces being captured" (Günther et al. 2017). Their setup made it impossible for students to know they were being photographed, providing the researchers with realistic, unconstrained, surveillance images to help build face recognition systems for real world applications by defense, intelligence and commercial partners. In fact, the dataset was funded by the Intelligence Advanced Research Projects Activity (IARPA), the Office of Director of National Intelligence (ODNI), Office of Naval Research and the Department of Defense Multidisciplinary University Research Initiative (ONR MURI), and the Special Operations Command and Small Business Innovation Research (SOCOM SBIR). A University of Colorado, Colorado Springs website also explicitly states that their involvement in the IARPA Janus face recognition project has been developed to serve the needs of national intelligence, establishing that the dataset of student images was created in the interest of United States defense and intelligence agencies.

Fig. 5 A still image from Wildtrack dataset collected at ETH Zurich, where researchers recorded students and publicly distributed their videos for surveillance research. The image is annotated to track students across multiple video frames.

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Wildtrack dataset

In another dataset originating in Zurich, Switzerland called Wildtrack, researchers made video recordings of students outside the ETH university main building. The videos were acquired in an "unscripted," "non-actor but realistic environment" (Chavdarova et al. 2017), implying forced consent. In total, seven 35-minute videos containing thousands of students were surreptitiously recorded and made publicly available for any type of research. Though the researchers described posting signs to inform students of what was happening (Kormann 2020), reviewing the videos shows that the vast majority of students were nonplussed. One student gave a camera the middle finger and then walked away.

The dataset eventually surfaced in a research paper on unmanned aerial vehicle (UAV) surveillance at the International Conference on Systems and Informatics, where researchers affiliated with Nanjing University of Aeronautics and the University of Leicester proposed a new method for detecting and tracking small targets from UAV surveillance feeds with applications for "conducting aerial surveillance" (Xiang et al. 2019). Figures published in their research paper confirm that video recordings of students at ETH Zurich were used for research and development of foreign UAV surveillance technologies.

CCTV and livecam images

On October 27, November 13 and November 24 in 2014, a researcher at Stanford worked with Angelcam.com (Stewart, Andriluka, and Ng 2016) to create a dataset called Brainwash. The dataset includes 11,917 images of "everyday life of a busy downtown cafe" captured at 100 second intervals throughout the day. The Brainwash dataset is notable, as mentioned previously, because the images of people in a San Francisco cafe were eventually used in multiple projects by researchers affiliated with the National University of Defense Technology in China. Brainwash is no longer distributed by Stanford, but unlike researchers at Duke, the researchers at Stanford did not provide any apology or admission of ethical breach.

Images from CCTV or security cameras provide another frequent source of data. In this case, the data is most similar to the potential environment in which it would be deployed, but the scale of these datasets is often smaller and less accessible. Datasets created

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from CCTV feeds include MrSub and Clifton, datasets of surveillance images from a sandwich shop used for head detection; Grand Central Station Dataset, CCTV videos from Grand Central Station in New York City used for pedestrian tracking; QMUL GRID, a dataset of commuters from the London Underground that was released by the UK Ministry of Defence for the development of person tracking technologies; and Oxford Town Centre, a dataset of pedestrians in Oxford originally created for the development of head stabilization technologies used in face recognition systems.

The Oxford Town Centre CCTV video was obtained from a surveillance camera at the corner of Cornmarket and Market St. in Oxford, England and includes approximately 2,200 people. Since its publication in 2009 (Benfold and Reid 2011), the Oxford Town Centre dataset has been used in over 60 verified research projects including research affiliated with Amazon, Disney, OSRAM, Sony, Volvo and Huawei; and academic research in China, Israel, Russia, Singapore, the US and Germany, among dozens more.

Fig. 6 Still images from the Brainwash dataset created from a livecam feed from a cafe in San Francisco used in multiple research projects for developing head detection algorithms.

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The Oxford Town Centre dataset is unique in that it uses footage from a public surveillance camera that would otherwise be designated for public safety. The video shows that the pedestrians act normally and unrehearsed indicating they neither knew of nor consented to participation in the research project. In June 2020, the website for Oxford Town Centre was taken down with no announcement or apology from the researchers.

Social media images

Social media images provide the second largest source of data "in the wild," with Flickr.com as the single largest source of data for face recognition and face analysis related experiments. The largest dataset, though not entirely comprised of faces, is called "Yahoo! Flickr Creative Commons 100 Million" or YFCC100M. As the name implies, it includes 100 million media objects with Creative Commons licenses. The YFCC100M dataset is the origin of one of the largest publicly available face recognition training datasets, called MegaFace.

MegaFace (Nech and Kemelmacher-Shlizerman 2017) is a large-scale, public face recognition training dataset that serves as one of the most important benchmarks for commercial face recognition vendors. It includes 4,753,320 faces of 672,057 identities from 3,311,471 photos downloaded from 48,383 Flickr users' photo albums. All photos included a Creative Commons license, but most were not licensed for commercial use.

MegaFace has appeared in research projects affiliated with Alibaba, Amazon, Google, CyberLink, IntelliVision, N-TechLab (FindFace.pro), Mitsubishi, Orion Star Technology, Philips, Samsung, SenseTime, Sogou, Tencent and Vision Semantics, to name only a few. A public records request by New York Times reporter Kashmir Hill revealed that the dataset has also been used by the Turkish Police, Danish National Police, Russian security and defense contractor Stilsoft, American defense contractor Northrop Grumman and Hoan Ton-That, the founder of controversial face recognition company Clearview.ai. Additionally, according to the press release from the University of Washington where the dataset was created, "more than 300 research groups [were] working with MegaFace" as of 2016, most of which are commercial. A New York Times investigation into the MegaFace dataset located and interviewed several people whose

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photos were in the dataset, most of whom were disturbed to learn how their photos were being used (Hill 2019).

Images from Flickr were also used to build the Who Goes There and GeoFaces datasets, which were used for racial and ethnicity profiling in research projects that tried to convert a face into a GPS location (Islam, Workman, and Jacobs 2015).

Other datasets exploiting Creative Commons for facial training data include People In Photo Albums (PIPA), a dataset created by researchers from Facebook to improve face recognition algorithms; Labeled Ancestral Faces in The Wild (LAOFIW), which used Flickr images for ethnicity profiling; Adience, a dataset of Flickr images used for age and gender estimation algorithms; IBM Diversity in Faces, a dataset of images derived from the YFCC100M Flickr dataset and used to address bias in commercial face recognition research; and Flickr Faces High Quality (FFHQ), another dataset of Flickr images created by researchers from NVIDIA and used for synthetic face generation experiments.

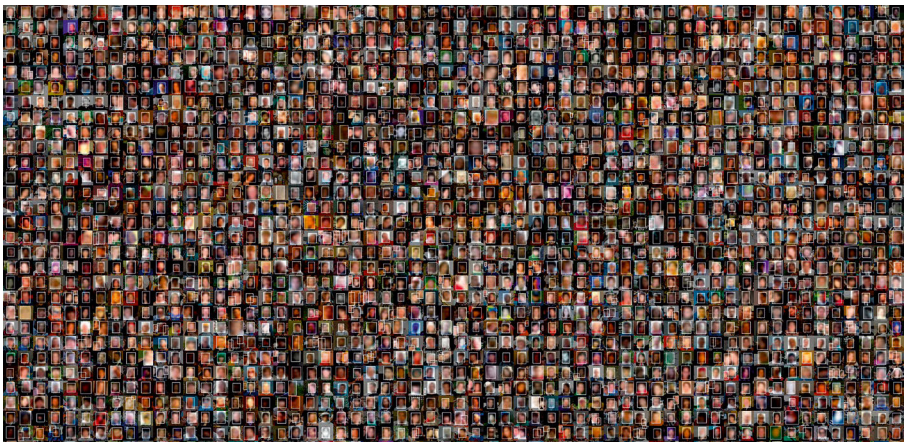

Fig. 7 Example images from the MegaFace dataset.

In total, our research discovered over 30 datasets using Flickr images. Many of these datasets overlap or comprise combinations of other datasets. Not all are used explicitly for face recognition, though all datasets have, in different ways, contributed the growth of remote biometric surveillance and analysis technologies. For example, images

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from the Microsoft Common Objects in Context (MS-COCO) dataset are used for person and object detection, and person detection overlaps with person re-identification surveillance technologies. Images from the USED and RESEED datasets were primarily used for social event or activity recognition, and activity priority objective in the Defense Advanced Research Projects Activity (DARPA) Mind's Eye program (Bouma et al. 2012). Taxonomies often overlap and datasets become reused over time, but often this can be traced back to defense or military applications. For example, the LFW dataset was originally created by academics at the University of the Massachusetts and it later received funding from the Central Intelligence Agency and the National Security Agency (Jain, Learned-Miller, and McCallum 2007).

Collectively, the datasets we analyze can be described as contributing to remote biometric analysis, with overlapping applications in hard biometrics (face recognition), soft biometrics (gender, age and facial attributes), social relationship analysis (interface analysis within groups), person re-identification and activity recognition, which collectively align with the advancement of surveillance technologies in in commercial and defense applications.

Public figure and celebrity images

The largest source of data "in the wild" is images of celebrities and public figures. Though this data is less "wild" because it comprises publicity and event photos with a cast of celebrities that often reflects structural inequalities in a society and replicates their bias, it also provides a higher quantity of images per person, which enables new types of face research. Because public figures and celebrities can remain popular over time, datasets have been created to exploit individual age diversity over decades of photos.

For example, the Cross-Age Celebrity Dataset (Chen, Chen, and Hsu 2015) uses photos from 2,000 subjects in the Internet Movie Database (IMDb) to construct a facial recognition training dataset capable of recognizing people with age disparities from a query face photo. IMDb is cited as the source for several more celebrity face recognition datasets, including CASIA-Webface (Yi et al. 2014), a dataset of 10,575 subjects; and IMDb-Wiki (Rothe, Timofte, and Gool 2015), a dataset of 20,284 subjects used mostly for age and gender estimation research.

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The largest source of face recognition training data is the Microsoft Celeb (MS-Celeb-1M) dataset (Guo et al. 2016). It includes 10,000,000 images from 100,000 subjects, with a target list of 900,000 more subjects, bringing the total list of names used in the project to 1,000,000. Microsoft's goal in building this dataset was to distribute an initial training dataset of 100,000 individuals' biometric data to accelerate research into recognizing a larger target list of one million people "using all the possibly collected face images of [these] individual[s] on the web as training data" (Guo et al. 2016).

While the majority of people in this dataset are American and British actors, the exploitative use of the term "celebrity" extends far beyond Hollywood. Many of the names in the MS-Celeb face recognition dataset are merely people who must maintain an online presence for their professional lives: journalists, artists, musicians, activists, policy makers, writers and academics. Many people in the target list are even vocal critics of the very technology Microsoft is using their name and biometric information to build. It includes digital rights activists like Jillian York; artists critical of surveillance including Trevor Paglen, Jill Magid and Aram Bartholl; Intercept founders Laura Poitras, Jeremy Scahill and Glenn Greenwald; Data and Society founder danah boyd; Shoshana Zuboff, author of "Surveillance Capitalism"; and even Julie Brill, the former FTC commissioner responsible for protecting consumer privacy.

Microsoft didn't only create MS-Celeb for other researchers to use; they also use it internally. In a publicly available 2017 Microsoft Research project called "One-shot Face Recognition by Promoting Underrepresented Classes," Microsoft used the MS-Celeb face dataset to build their algorithms and advertise the results. Microsoft's corporate version of the paper does not mention that they used the MS-Celeb dataset, but the open-access version published on arxiv.org does, stating that Microsoft analyzed their algorithms "on the MS-Celeb-1M low-shot learning benchmark task" (Guo and Zhang 2017).

Despite the recent termination of the msceleb.org website, the dataset still exists in several repositories on GitHub and on the hard drives of countless researchers, on AcademicTorrents.org, and will likely continue to be used in research projects around the world. For example, the MS-Celeb dataset was used for a competition called "Lightweight Face Recognition Challenge & Workshop," where the

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best face recognition entries received monetary awards. The organizers of the workshop provide the MS-Celeb-1M data as a 250GB file containing the cropped faces (iBug 2019).

In June 2019, after Microsoft had taken down the dataset website, MS-Celeb reemerged on Academic Torrents, where it has been downloaded hundreds of times without any restrictions. MS-Celeb was also repackaged into another face dataset called "Racial Faces in the Wild" (RFW). To create it, the RFW authors uploaded face images from the MS-Celeb-1M dataset to the Face++ API and used the inferred racial scores to segregate people into four subsets: Caucasian, Asian, Indian and African, each with 3,000 subjects.

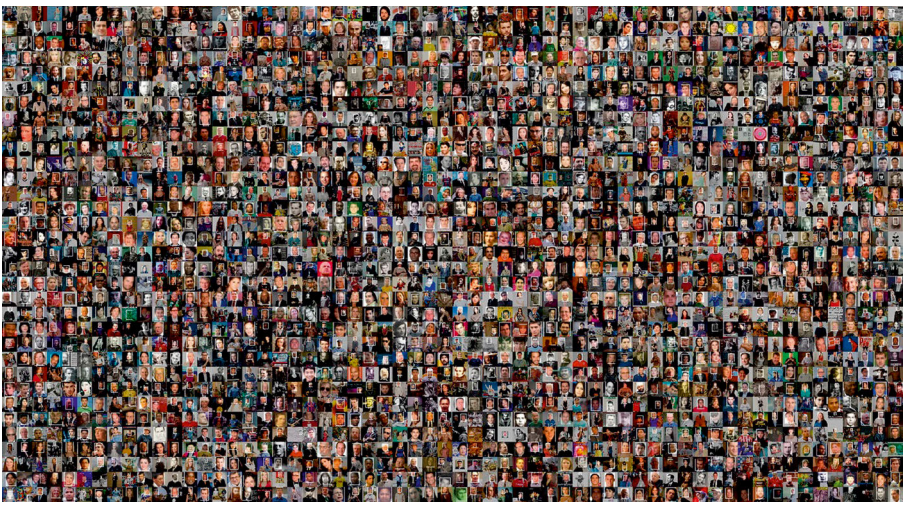

Fig. 8 A still image from MS-Celeb dataset.

Meanwhile, Microsoft researchers never actually stopped using the MS-Celeb-1M dataset. A November 2019 research paper posted to the pre-print server Arxiv entitled "A Scalable Approach for Facial Action Unit Classifier Training Using Noisy Data for Pre-Training" (Fung and McDuff 2019) cites using "the large scale publicly available MS-Celeb-1M dataset" for "the pre-training stage" of building automated facial action unit classification technology. The author of the paper is affiliated with Microsoft Research.

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Conclusion

From one perspective, "in the wild" is an ideal characteristic for training data because it can provide a closer match to an unknown deployment environment. Theoretically, this can improve real-world performance by reducing disparity and bias. In reality, data collected from sources "in the wild" inherit new problems including the systemic inequalities within society and are never "natural" or "wild." Representing datasets as unconstrained or "wild" simplifies complexities in the real world where nothing is free from bias. Further, collecting data without consent forces people to unknowingly participate in experiments which may violate human rights.

However, for certain types of datasets or applications, it may be in the public interest to provide publicly accessible data. Not all datasets contain faces or biometric information. Creative Commons licenses were designed to unlock the restrictive nature of copyright and allow creators to share and remix each other's work. Allowing Creative Commons images for machine learning and artificial intelligence applications may be public utility, as the Wikimedia CEO, Ryan Merkly has noted (Merkley 2019), but only if better regulations are created to protect biometric information that can be exploited for surveillance and biometric technologies, with serious implications for privacy and human rights. Currently, Creative Commons is not interested in such a license, but our research suggests it may in the public interest to continue this pursuit, or else develop alternative data licensing schemes and move away from using Creative Commons.

Additional datasets and utilities, including a search engine to help locate social media images in datasets, are currently being developed and will be published on our research project website https://megapixels.cc.*

* Editorial note: In January 2021 MegaPixels was transferred into a new project, Exposing.ai: https://exposing.ai/.

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Digital Sovereignty in the Pandemic City

Mona Sloane

Introduction

The raging public health emergency that the COVID-19 pandemic brought upon the world in March 2020 profoundly affected how each of us live and work. The isolation prescribed through lockdown mandates in many places moved even the most basic social interactions online, ranging from exercising, to having dinner with family members, or worshipping. It also shifted how we connect as communities.

How this phenomenon unfolded in New York City was the focus of Terra Incognita NYC. This qualitative research project, grounded in digital ethnography, focused on how citizens of New York City created digital public spaces. The project ran over two months in the summer of 2020 and across a diverse range of communities in all five boroughs in New York City: Manhattan, Brooklyn, Staten Island, the Bronx, and Queens. The qualitative data collected over this relatively short period of time generated rich insight into the ways in which individuals and communities experienced and dealt with the sudden move of much of social life into the digital realm, and how they connected with and through technologies in different ways.

What I want to offer in this short piece is a reflection on this data through the lens of "digital sovereignty" and inequality. For better and for worse, the pandemic provides an important opportunity to re-examine and expand the notion of digital sovereignty – sovereignty,

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in this digital context meaning the capacity for self-determination of individuals and communities (Pohle and Thiel 2020), particularly in cities.

The idea of *digital* sovereignty, more recently, has been linked to notions of "individual self-determination" focused on "on the autonomy of citizens in their roles as employees, consumers, and users of digital technologies and services" (Pohle and Thiel 2020, 11). Citizenship, it seems, is positioned as *conditio sine qua non* for (digital) sovereignty. Very broadly, "citizenship" refers to being "a member of a political community who enjoys the rights and assumes the duties of membership" (Leydet 2017). It is often used interchangeably with "nationality" and is defined as providing "people with a sense of identity, [and entitling] individuals to the protection of a State and to many civil and political rights" (Feller 2005, 4). Basing the right to internet access on the status of citizenship is not new. In 2016, the United Nations declared internet access a human right by making an addition to the Universal Declaration of Human Rights (UDHR), Article 19, stating that the right to freedom of opinion and expression includes the promotion, protection and enjoyment of human rights on the internet (United Nations 2016).

Access

The COVID-19-induced shift of social life into the digital world was, by no means, an equal one, particularly in New York City. Citizenship did not guarantee internet access: "going online" was easy for some and incredibly difficult for others, for a wide range of reasons. Illness, duties as caretakers or family members, bad broadband access, no or outdated hardware, job demands, precarity, tech literacy – these intersecting dimensions, and more, made for very different experiences of our new "online lives."

Education, in fact, became a new frontier of this divide. In pandemic-New York City, internet access did not mean the same thing for educators and students alike. "Remote instruction" was challenged by a multitude of aspects that affected people and communities in different ways. Some students were able to comfortably shelter-in-place with family, dialing into the virtual classroom via a broadband connection from their own rooms, using their own laptops. Others were challenged by not only a lack of a high-speed internet connection, but also by hardware issues, family obligations

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and responsibilities, as well as economic hardship. These challenges were diverse, manifold and compounding, and in New York City, they tended to map onto geographies of race and class divisions, with poorer neighborhoods – disproportionately inhabited by communities of color – lacking access to conduit or utility poles at greater rates than in wealthier neighborhoods (NYC Mayor's Office of the Chief Technology Officer 2020).

These overlapping cartographies are not accidental, but the result of longstanding and powerful social imaginaries about what communities are deserving of "scarce" resources, and what communities are not (Eubanks 2018). These imaginaries are solidified in public policies that impact infrastructure provision and maintenance, and that amplify the disproportionate impact disasters have on historically oppressed communities in the U.S., especially the African American and LatinX communities.

Disasters ranging from the current pandemic to the hurricanes Katrina and Sandy and the 1995 Chicago heat wave have shown that this is a social breakdown by choice, as sociologist Eric Klinenberg reminds us (Klinenberg 2002). In that sense, vulnerabilities of (technical) infrastructure become social vulnerabilities, and disasters become social and political phenomena, as much as medical or natural ones (Nelson 2020; Shah 2016).

While simple access was a core element in this dynamic, the varying conditions and qualities of access threw up even deeper divides. The individuals and communities that we studied over the summer of 2020 all had vastly different abilities of "connecting," many of which were conditioned on the provision of largely privatized broadband infrastructures that were unevenly distributed across the city. In order to participate in the various digital public spaces that emerged over the city and within and across communities – places of worship, exercise, culture, mutual support, and more – people depended on a much wider variety of aspects: the availability and quality of access devices, the ability to use the them at the time needed, and access to the relevant services and platforms.

Maintenance

The COVID-19 pandemic has thrown into sharp relief another major challenge to digital sovereignty: the fact that the infrastructures that make the digital city possible and that enable a continuation of social

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life are mostly privately owned. This ranges from the cables in the ground to the platforms and softwares that allow for schooling, work and more: Zoom, Microsoft Teams, Slack and many more.

What we've learned in the Terra Incognita NYC project is that these privately owned socio-technical systems – and the digital public spaces they create – depend on what Alexandra Mateescu and Madeleine Clare Elish (2019) call "human infrastructure," the – typically precarious – human labor that is needed to make systems and infrastructures function. In the pandemic city, this "human infrastructure" was not just the well-paid labor that was needed to maintain broadband cables in the ground or the electric grid but also labor that was needed to maintain the proper functioning of the city as a complex socio-economic organism as a whole. The "human infrastructure" of NYC is often recruited from vulnerable communities.

And in the context of the U.S. and New York City, the members of these communities are not necessarily those who are afforded the label "citizen." In New York State, 70 percent of the state's undocumented labor work force works in essential businesses (Nicholson and Alulema 2020) – those jobs that make the "digital city" possible by way of maintaining the "physical city" – as healthcare workers, grocery workers, delivery workers, public transport workers and more. The point here is that the maintenance of the private infrastructures for the sake of digital sovereignty for a few meant systematically putting these communities at a higher risk of contracting a deadly virus.

We can and must put this against the backdrop of the mechanics of capitalist extraction that rule big tech, ranging from warehouse and delivery workers that maintain and grow Amazon's online retail empire, a company that was valued at $1.49 trillion in July 2020 (Klebnikov 2020) to the data extraction that occurs simply through the use of online platforms, from Zoom to Gmail to WhatsApp, TikTok, MeetUp or Twitter. As Shoshana Zuboff outlined in detail, this constant data extraction has created a somewhat global state of "surveillance capitalism" which trades in "behavioral futures" (Zuboff 2019).

What we also learned from the Terra Incognita research is that the maintenance of digital space has even more nuances and goes well beyond this "essential" labor. We observed a form of social maintenance that took multiple forms. For example, it took the form of providing access to the digital social spaces for people who were unable to generate that access for themselves, often elderly community

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members. A rabbi of a synagogue in Queens bought webcams for elderly members and recruited volunteers who safely installed them in their homes. Community members in their eighties and nineties were able to join Shabbat services with their webcam on, "seeing" the rabbi, as well as other members.

Curation

The social maintenance was also made up of what we call "curation". This curatorial labor was often focused on maintaining a sense of normalcy, to continue with well-established routines and ways of doing things that often are the social glue holding communities together. These routines would range from anything from worshipping to exercising, public programming, playing, volunteering and much more. For example, runners organized in running clubs continued to "collectively" run by posting their individual runs on Instagram or sharing their running data over Strava, an exercise app.

The curational labor that underpinned these virtual spaces was often focused on "translating" practices into their digital form, and directing and controlling the flow of activity and interaction in the digital space, as well as holding the space when disruptions occurred.

For example, the host of an open mic poetry night run via Zoom enforced strict rules about when people were allowed to unmute themselves. The Queens rabbi followed a similar strategy. Community members were only allowed to unmute themselves when they were scheduled to read a prayer or to give a performance or when it was time for collective prayer. Only at the end of the service was everybody allowed to unmute and just talk to one another, an element people enjoyed as they were able to informally connect ("Good to see you! How is your mother?" or "Congratulations on your engagement!").

Similarly, the curatorial labor often also extended beyond the core social practice – worshipping, exercising, volunteering, etc. – and was explicitly focused on building and maintaining social connection in general. For example, some of the running clubs also organized virtual social events that were not running-related to encourage socializing with peers and keep up motivation.

Moderators and facilitators, those doing the curatorial labor, often viewed their work as a form of service to their community. As the significance of creating and holding online spaces grew over

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the course of the pandemic, so did their sense of duty and care. Moderators and administrators saw their work as a service to their communities.

The Terra Incongnita research also showed that maintenance was a political matter, because curatorial labor, particularly when it took the form of moderation, was a political practice. Moderating a digital space was all about controlling the space, determining and enforcing who can come in and who cannot, as well as monitoring behavior and speech. This became particularly apparent in the Staten Island Facebook groups, where administrators and moderators where often confronted with having to enforce group guidelines around political speech.

Digital Sovereignty

As this data shows, the maintenance of digital sovereignty – often for some, not all – is dependent on different kinds of (often uncompensated) labors that, in a global public health emergency, disproportionately put communities at risk. We must ask: Who maintains the infrastructures needed for digital sovereignty? Who bears the risks associated with this maintenance? Relatedly, what is the cost of digital sovereignty? And who pays?

Against the backdrop of these questions, tying the notion of digital sovereignty to the status of being a citizen is a weak theoretical suggestion at its best, and a harmful policy at its worst, because it is exclusionary, potentially not affording digital sovereignty to those who maintain crucial socio-material and -political infrastructures.

It may be more appropriate, and more equitable, to ground the notion of digital sovereignty in the notion of "community" or "population," rather than citizenship. We can take a cue for such an intervention from artist Hans Haacke. His artwork "Der Bevölkerung" (2000) is located in the north courtyards of the Reichstag building, where the German parliament, the German Bundestag, resides. It was commissioned by the German parliament and consists of a trough bounded by wooden beams that has at its center the words "Der Bevölkerung" ("To the Population"). The typeface is the same as the inscription "Dem Deutschen Volke" ("To the German People") which was installed on the Reichstag building in 1916. The artist Haacke keenly underlines the difference between "Volk" (people) and "Bevölkerung"

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("population"), pointing to a broadened notion of citizenship as based on place of birth, not ethnicity.

New conceptualizations of digital sovereignty must learn from these critiques and develop a more holistic view for the conditions needed for individuals and communities to gain and maintain the capacity for self-determination.

If we take this commentary against the backdrop of digitization, and the question of if and how internet access is central for being a citizen and for sovereignty in terms of self-determination, then we can start developing a more expansive notion of digital citizenship that is grounded in belonging, and that serves as precondition of "sovereignty" over and above legal status.

Conclusion

In this short piece, I have offered a critical reflection of the notion of "digital sovereignty" in the context of inequality and the COVID-19 pandemic. To do so, I have drawn on qualitative data collected as part of the Terra Incognita NYC research project, which I led in the summer of 2020, and which sought to understand how New Yorkers maintained social ties under lockdown mandates and created different kinds of digital public space. I have argued that the pandemic has shown that participation in digital sovereignty – and the notion of "autonomy" it purports – is not simply conditioned on "access" to broadband internet, but on a multitude of socio-economic conditions that are unevenly distributed across society.

In the second and third part of this chapter, I have focused on the infrastructures and maintenance regimes needed to maintain digital sovereignty, both in terms of material maintenance, and in terms of the social maintenance. I have introduced the notion of risk distribution as a necessary condition for the maintenance of often privately owned digital infrastructures, and argued that, particularly in a pandemic, already vulnerable communities are often the bearers of this risk. I have also shed light on the many ways in which curatorial labor becomes maintenance infrastructure in a pandemic, and how it is often related to who holds power in a space. I have used this empirical material to argue that the existing notion of digital sovereignty is too narrowly focused on "citizenship" and therefore creates an exclusionary dynamic. To remedy that, I have suggested to develop a more expansive notion of citizenship that can inform digital sovereignty,

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and that is grounded in belonging and community, rather than legal status.

Overall, I want to underline that these observations must be read as commentaries and suggestions for conceptual expansions of the idea of digital sovereignty, not as critiques. If the global public health emergency brought about by the COVID-19 pandemic has shown us one thing, then it is that we can and must rethink how we address the intersection of inequality, technology and society. Digital sovereignty can be a tool for creating more equitable futures. But only if it is grounded in empirical observations, with a focus on community wellbeing.

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WannaScry!
An Interview with Danja Vasiliev

Danja Vasiliev and Daniel Irrgang

Danja Vasiliev, co-author of "The Critical Engineering Manifesto," is an artist and activist working on the exposure of data exploitations in networked systems. The interview centres around his work "WannaScry!", an installation revealing privacy issues of video conference platforms and which was under development at the time this conversation took place (October 23, 2020).

Daniel Irrgang: I would like to start this conversation with a quote taken from a text you and Julian Oliver wrote for a book published by transmediale festival in 2016, which, in my view, frames the motivation behind your work: "Engineering is far too important to be left to the experts – to academic papers, patents, military and corporate research facilities … The cultural conversation we call art is challenging aesthetic, social, cultural, and political habits and regimes to better understand how we are their subjects. In today's world of integrated and automated systems, complex communication networks and their technologies, there is no less need for such subjective transformation. Only by doing so can new mobilities (and thus futures) be modelled. Without insulting from state intervention by art infrastructure, there would be no safe, public forum for techno-political expression, no context for understanding how our increasingly engineered environment engineers us. But a black box made of many" (Oliver and

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Vasiliev 2018, 201). This quote contains references to privacy, digital literacy or digital sovereignty and the role that art and activism can play in exposing opaque power relations. Do you want to elaborate the premisses of both the quote and your work?

Danja Vasiliev: References are extensive, I guess. Probably the earliest one, historically speaking, is that we build machines by our own example. Such as the early fantasies we have of robots, of the expectations we have of machines in general, which I think are flawed, just as our expectations of other people are flawed. So, despite the fact that we create machines by our example, we create technology as a juxtaposition to the biological substrate. But to humanize machines is a big failure of our human-computer interaction model, I think. And it is something that new generations absorb as part of their upbringing. But people even today, in our age and in our circles, they have not been drawn to these machines like new generations have, and still, up to this day, we are wrapping our heads around this paradigm. We now have to trust and rely more and more on things that actually are artificial, things which make decisions based solely on algorithms.

I don't know if this relates much but going back to the quote, I think at the core of it all is the concern that, should we trust technology to be applied solely by governments and corporations, what we are going to get is a very police-like regulation, promoting types of technologies to keep society under a watchful eye.

At the same time, we are at a point where technology is so ubiquitous. There has to be a place for cultural experimentation to promote all these twists of our human minds, twists other than hurting or restricting our communities, such as curiosity-driven projects and different strands of research, they all have to have their place. Should we allow the technology to be policed and to be encapsulated in machines and products that dictate an already final, opaque and standardised design? This will end up destroying any opportunity for future culture to develop, because the assumption is more and more that culture will rely on underlying technology and thus, by extension, on the freedom that this technology affords or allows when it comes to altering, modifying and individually developing it.

And it has been an observation of multiple people in the field that the further technology develops towards complexity, the more opaque it gets – a factor that comes along with efficiency. So, the

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more efficient technology is, the more black-boxed it will be, just by nature of having to integrate more and more circuits on a particular chip. A record player, with a spinning plate, a pickup and so on, is a good example of previous technology and a great analogy of a very extroverted device which tells you a lot about itself and how it works, compared to mobile phones or similar devices where it is often hard to tell what the designated functions of components are. It is more complicated, or even impossible, for new generations to decipher and understand all those elements. If you try to open such a black box you will probably break it, and no one will fix it for you.

Such considerations have a huge impact on how I do my work. It is very important to attempt to reclaim the ability to interact with technology, in a way that sometimes might even be illegal, to uncover the hidden principles of networked technologies. I hope this approach will be more and more discovered by different groups of people. Not to say that this is always discouraged, of course there are devices like Raspberry Pi and Arduino boards, but still it remains very difficult to approach an off-the-shelve consumer device, crack its cover open and attempt to mess with something that wasn't ever designed to be messed with. This is why the "Critical Engineering Manifesto" (Oliver, Savičić, and Vasiliev 2011–2019) was written all those years ago and why other people like you and around the world teach these ideas to their students.

DI: Historically it would be interesting to note that the claims you and others make, to open technological devices and to bend their circuits to our own will, cannot only be traced back to the hacking of ICT but has its roots far deeper. For example, the German Radio Workers Movement, which, especially in the 1930s, built their own radio transmitters to understand how this, back then new, media functioned, and to be able to distribute their own political messages, beyond the restricted and centralized political agenda of the government. Of course, these movements where quickly criminalized and suppressed as soon as the Nazi government came to power.

DV: Yes, some of them where even former military, that's why they had the skills and knowledge to carry some of that technology into the public sphere. They were technologically well educated.

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DI: It is interesting that you referred to the notion of black box. The cultural philosopher and media theorist Vilém Flusser used to reiterate this phrase, in its cybernetic connotation, when talking about the opacity of more advanced technological devices: "The black box is a structurally complex but functionally simple apparatus" (Flusser 1974, 1). Those devices are technologically complex on such a high level that only a few people understand their operating principles. And the rest needs to, or rather wants to, focus on the surfaces of this black boxes, on the interface, engaged by user experience strategies. Do you feel, despite of your work, that many people are not interested in the first place what is actually underneath the surfaces of their devices? That they just want to use their gadgets as easy as possible? How would you approach these people?

DV: It's a really difficult question. In fact, it's a really difficult wall to break through. I don't think there is a working solution to that, really. One of the reasons why this "seamless" technology was created in the first place was to allow those that were not acquainted with technology to start using it: simplification, minimization, graphical user interfaces making it less anxiety-provoking to use computers. All this designated functionality of machines – it's fine as long as their purpose is to allow the user to focus on their task. But what is not fine are the multiple examples where machines are running in the background, tracking your mouse movement or recording your online behavior. There are multiple examples, such as remote Bitcoin farming somewhere that you happen to accidentally load a JavaScript file from.

Currently, I am involved with an NGO, TacticalTech, a collective of about 30 people using computers intensively. Most of my colleagues are pretty good in monitoring and checking out their computers. But even they are sometimes amazed: "My computer is running really hot, I don't know what's going on – I'm not doing things but it's running and blowing." There are really simple ways of checking out what's happening on your computer, what problems it has. But it seems that people aren't even minded that way to go and research how to identify and solve such problems on their own. Which to me is something very alien, because even if my computer is running fine, I still like tinkering with it – and breaking it way too early and way too often [laughs].

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Usually, the relationship with technology is, in a way, that it shouldn't be touched. It's so complex that many people don't even start to think about going beyond the interface. Nowadays, more than in the days when I started messing with computers, which was around 20 plus years ago, it is almost a taboo, in a way, for those users that aren't developing anything related to computation directly. It's unadvised, especially by computer manufacturers. There are mechanisms in place, potent and very sophisticated, that prevent what is called tampering with those operating systems, which keep a watchful eye on all the changes that happen to the system running on your computer. In order for the machine to efficiently maintain itself and not to break down it seems that it should not be touched, ever. It was similar back in the '80s: The more expensive cars had their hoods sealed, which you weren't supposed to open, and if you did open it you would risk the warranty. It's an attitude of actually not owning the technology that you are dealing with – rather you are kind of "leasing" that technology. I find that reality so different to what we are actually used to as materialist beings: If you own something, you really, physically own it. But this idea of being leased, a piece of software, or maybe a computer, this feels really wrong.

Many of the efforts that inspired the "Critical Engineering Manifesto" were done in order to break out of this loop; by breaking most of the devices while investigating them you come to realize how the device works. Of course, it requires a particular interest to be willing to do that. And I don't think the manifesto was written in an attempt to make everyone go insane and to break every device they find...

DI: Which would be interesting in its own right!

DV: It would indeed be very interesting! And in fact, it did have such an effect, on a smaller scale [laughs]. It's more about a way of thinking that should be fostered parallel to using a computer: What else happens there? When it is connected to the internet and it uploads and downloads files, is there anything else happening? How is all that regulated?

The further we talk about it, the more there is to add. And I guess that's one of the issues I always have in mind while making my artwork. Most of the pieces are basically illustrations of hacks, computer hacks or sort of unauthorized ways of using one technology or

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another. Most of those works were done in an effort to demonstrate what does happen, or what could happen, behind the scenes.

DI: That's actually a very nice transition to another sentence I would like to quote. I believe this one is from the "Critical Engineering Manifesto" and I think it's the strongest one in terms of bringing your mode of work to a point: "The critical engineer considers the exploit to be the most desirable form of exposure" (Oliver, Savičić, and Vasiliev 2011–2019). For me, this is – in one sentence – what you are doing.

DV: Yes, that's a good one. Because how else can you effectively teach someone about what's inside the computer other than by letting the person crack the computer open? The use of the word exploit in this case is very broad. It really depends on your personal aims. What do you want to achieve? If you want to see what's inside of your computer and you open it – yes, you do exploit in a way to gain knowledge about what's inside. And if you want to plant some remote trap somewhere on the internet to intercept someone's data, it's an exploit as well, but with a completely different purpose.

Considering this broad meaning of the word "exploit" I think it can nonetheless be applied very effectively to the educational parts of the hacker movement, for instance. Having taught workshops for the last 15 years to various kinds of people I learned that it's important not to overwhelm those who you try to introduce to ideas of technological domains, but to take it slowly.

DI: Maybe we can talk a bit about the project you are currently working on, which you have titled WannaScry!, obviously a reference to the 2017 WannaCry computer virus. As I understand it, the work will be a critical approach towards video conference systems – a very topical project in times of tackling pandemic-induced social distancing by spending way too much time, at least in my daily routine, in video calls.

DV: As for myself, I always try to avoid video conferences because I find it quite a discomforting experience, I don't know why. I recently went to MediaMarkt[1] and it was sold out of webcams. It reminded me of the early 2000s, when the Web 2.0 was on the rise, how excited

1 Editorial note: A German retail store chain for consumer electronics.

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everyone was. But we were forgetting about the fact that the process of content production also produces metadata, and metadata means hundreds of interested third parties. With Web 2.0, for half a decade data communication between Web users defaulted to unprotected protocols, so you could intercept it directly "from the air."

And this is the kind of the situation with video conferencing services today, after the majority of Web users community, or should I say, a major part of human civilization, was forced to use this relatively new video conferencing technology. Not new per se, of course it exists for a long time, but those services have never experienced such a large number of users – who use video-streaming technology not only to consume but to actively generate new, private content. This provoked a wave of interest followed by numerous attempts to intercept and, in a rogue way, participate in private video-calls. It isn't at all unthinkable that state-controlled internet, state-funded internet providers and corporations will be trying to get their hands on this type of information gathering. Because as with private personal metadata back in the days of the Web 2.0, a lot of very private and personal information is nowadays being transferred with video conference software, especially in combination with machine learning algorithms that use your voice, your articulation, your facial expressions – this actually exposes much more of your biometric and personal information compared to any metadata in the days of Web 2.0. For example, by snatching your video call one can train a deep-learning algorithm to recreate a fake identity, which identifies itself with your voice, body movements, facial expressions.

What made me very aware of the fact that those problems are all quite real, was when back in April 2020 a large library of "dumped" Zoom video-calls recordings was found on unprotected Amazon servers. Those dumps were quickly downloaded and re-published by a group of hackers and became known as "Zoom Leaks," and remained available online only for about 5 days, if I recall correctly.[2] There is also a large number of screenshots – pictures of computer screens – with secret IDs for video calls regularly circulating on Twitter, that enable people, like the Dutch journalist Daniel Verlaan

2 Editorial note: A platform for dumped Zoom video call IDs (cf. Krishnan 2020).

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in November 2020,[3] to guess access codes and "gate crash" those calls, even when those calls were secret and held by institutions such as the European Ministry of Defence. So, it occurred to me that this environment is a very naive, vulnerable and insecure place.

DI: Thinking about it, the nature of video conferencing – having a pretty good close-up of your facial expressions in combination with a recording of your voice – that's the best dataset for any deep learning algorithm to produce a specific deepfake video.

DV: Yes, absolutely. There are many things to think about and consider when developing such a work, as always. I've been working on WannaScry! since May and the work goes rather slowly, because it's a complex piece. It's supposed to be a physical installation and I already had to work with three different production studios to produce the pieces for it. It takes time, especially in times of COVID-19, having to order something online and until it comes to your studio it takes a month – and then you realize what you had ordered was not the right thing, and you have to order it again; and in the meanwhile, I'm developing the code.

So, since May I've been working on a model of a video conferencing service that is "rigged" to record every conversation that takes place through the service. WannaScry! illustrates a security breach of a video conferencing service and demonstrates the extent to which personal biometric data can be intercepted and extracted by malicious cyber agents seeking to create and puppeteer alternate identities, potentially with the aid of machine learning algorithms. With this project I want to draw attention to the next generation of human-machine interrelationships and vulnerabilities. Familiarizing oneself with the benefits and hazards intrinsic to the use of digital tools and networking technology is necessary in order to safely navigate the internet and secure one's cyber-wellbeing. To make an informed choice of digital tools, including those for protecting our digital rights, one would first need to understand what compromises are involved by

3 Editorial note: In November 2020, the Dutch journalist Daniel Verlaan accessed a Zoom meeting of EU defence ministers after guessing the access code pattern visible in photo posted on Twitter by the Dutch defence minister Ank Bijleveld (Deutsche Welle 2020).

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engaging with the latest technological trends. This includes, especially during the current pandemic crisis and its digitally aided social distancing, video conference systems.

Thinking about this complex in an exhibition context, video and audio data, plus some of the video call-specific meta information about the persons participating in the call will be displayed. The plan is to make WannaScry! interactive: Visitors can use their mobile device to make a video call using the service by inviting someone from the audience and/or someone online to watch their conversation displayed as it's captured in real-time and projected onto the WannaScry! sphere. All the while this will be rendered into a form of a scrying ball, a "palantír"-like device, like the all-seeing stone in Tolkien's *The Lord of the Rings* – a device remotely connected to a person, ready to tell you about their deepest secrets and insecurities.

My interest, however, is not to sneak up and hear peoples' secrets, but rather to have those very people be confronted by my work, to see themselves revealed by a seemingly innocuous "gazing ball" and realize that, whenever you talk to your computer, you're not talking to your intimate partner alone – you are actually talking to everyone who wants to listen and has the capability to do so.

DI: When you decided to give the work a form resembling a "palantír," are you also, subtly, pointing to Peter Thiel's surveillance corporation with the same name?

DV: Well, I originally didn't think about a palantír, the seeing stone, but it happens to be the culturally most known reference for such a device. I was thinking about gazing into a misty scrying ball with "supernatural" capabilities. One of the established terms in the paranormal domain is "remote viewing" – an extrasensory ability to connect to and to read remote minds... An ability which nowadays internet services can facilitate quite well, thinking of the internet as a rhizome network that we all are a part of – a parallel dimension of sorts where one can plant a probe in and suck all the information out. This is when the Palantir Technologies company reference comes into play and contributes a terrifying example of how real all this is.

The machine that I'm building aims to lure people into using it, while at the same time it's not an attempt to scam people – it is going to be in an exhibition with a big sign on it saying, "connect to this

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URL and see your private conversation being made public." It's about making explicit the exploit of this technology in an attempt to help people understand the potential of such an exploit as a result of their own personal choices.

DI: Is it going to be connected to video-conference service of a bigger provider or will it run on your own platform?

DV: It's my own platform, and people will know that it isn't a real provider. I'm not going to try to be as promiscuous as one would need to be in order to pretend being a real provider.

Another aspect, a parallel thought which touches less on media theory or cultural impact of technology, but which is rather about the techno-political aspect of open source, is the fact that the software I'm using to create this rigged service is open source software. This means that anyone could make exactly the same modifications as I did, to create such a palantír and plant it somewhere online. Then advertise their platform as a completely legitimate, free-to-use service while covertly retaining your data. The thing about safety and security that open source software promises, is that since the software base is entirely open, it does not prevent anyone to come in and make modifications that might not be beneficial for the users of that software or technology. It's one thing to be running open source software on your laptop – you installed it and there was no third party involved – but it is an entirely different story when open source software is used as an online service. Just the fact of connecting to servers that claim to be running open source software doesn't mean that this open source software wasn't modified in some way. On an industrial level, there are ways to verify the validity and coherency of such software installed on a server – package checksums, automated auditing, etc. – but such practices have never reached the consumer market, or rather consumer-facing substrate of the market. When you connect to some random server, one assumes – or chooses to believe – that the server's software doesn't contain any sinister modifications. But if modifications did in fact occur there is no mechanism in place that would notify the user about these modifications, there is no security check between a user and a web service based on open source software. It is for that very virtue that the trust we put in a service running on top of open source software relies solely on the reputation

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of those who run the service and not the software itself – which is in fact a concerning issue.

DI: Do you know how you will form or design the aesthetic aspect of your work? How will you present it to make it expose its functions, or intentions, so to speak?

DV: Well, this is still in flux. I want to have it look and feel as close as possible to an ordinary, everyday experience of using video conferencing services. But, of course, given the fact that it will be shown in an exhibition context with people around it, for that reason I'm creating this palantír-like device, a sphere on which recordings of video-calls and personal information is going to be projected. There is a potential for the work to be interactive, so you could actually scroll through and watch video calls and listen to conversations which have taken place. The main intention is to make sure that, whoever approaches the work, they come to realize that whatever passes through such a system can be captured, exposed – and exploited.

DI: Do you plan an extension of the work that shows possible results of such an exploit, say, a deepfake application of the data harvested?

DV: That would be a far-reaching extension, because most of the analysis needed for teaching an algorithm isn't done in real-time. So, it might be like a chapter 2 of the work, as in "and here we can see what the machine has learned" [laughs]. In the current context, I see the device more as signifying a source of gathered information which could potentially be passed on to either black markets or third-party buyers, for instance data-brokers, who illicitly acquire private personal information. This is why, for now, I'm going to focus on *how* information is gathered, rather than what happens next.

There are so many aspects to consider in a project like WannaScry!, so I first need to work on what I can realize and then take it further. That's the thing, you see, about artworks created in this field – you cannot treat them as a product, you cannot treat them as a service. Because once you start doing that you will end up in this loop of maintenance, servicing and user support. It has to be bound by time. Artworks are created to illustrate the contemporary state, as in the current state of time when the artwork was created.

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I wouldn't want to maintain an artwork to make it function for the next ten years because that's not the point. By the time I finish the work, it might already be obsolete and possibly dysfunctional. "Newstweek," for example, a project on which Julian and I worked in 2011, signified the extreme openness of unencrypted, clear-text network communication.[4] A year after we had released Newstweek, Edward Snowden came out with his NSA revelations and everything on the Web became encrypted using HTTPS/TLS. Which was great – and instantly made Newstweek be a thing of the past.

DI: So, your work has a "best before – things get better" date.

DV: Yes, "expired before released!"

DI: You mentioned data-brokers, we talked about deepfake. What issues can you imagine – intended and maybe unintended ones – that your work will address or discussions it will trigger once it is running and will be exhibited?

DV: So far, I've been – ambitiously! – thinking about creating a profile for each person, for instance a voice signature; a biometric signature, such as the face; place of origin, or at least place of origin of the call. And I was thinking about creating some kind of dataset of the conversations that people conduct through the system. But since there isn't really a selection for any particular subject that will be discussed, it will be rather about demonstrating the potential functionality of such a system in place.

Here is an example: if a proxy, a *man-in-the-middle* server, capable of retaining video call information is placed in an office of a political party, then you could search for much more specific data in those conversations, and maybe employ something like a speech-to-text conversion to create machine-readable pieces of conversations that took place – for instance. I don't think about WannaScry! as a project on stealing any particular type of data, rather the work is there to spark attention of the public about these weaknesses, about

4 Editorial note: "Newstweek" (2011) is based on devices that can alter the content of news websites read on public wireless networks. It was developed in collaboration with Julian Oliver and received the Ars Electronica Golden Nica award in 2011.

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vulnerability, about the possibility of security and privacy breaches happening – and again, again and again saying that whenever you converse using your computer and the internet, you are not conducting an intimate, private conversation.

DI: Here we could come back to Vilém Flusser. He died in 1991, so before the rise of the World Wide Web. But he wrote about the coming "telematic society" because at the time, from 1972 on, he lived in France, where the Minitel, the French national "proto-internet" was rolled out in the 1980s. The possibility to communicate via networked computers he sometimes described as "telepresence," a term also popular with artists at the time and during the course of the 1990s: to interact with the other over longer distances, implying that time and space is vanishing – this old McLuhanism, a utopian concept. Online video conferences are actually the perfect vehicle for this narrative, a quite romantic narrative.

But now your work is turning this on its head: Especially in times of social distancing, one wants to be closer to the distant other. One wants to have an intimate conversation – but just that it's not. The whole purpose of the exploit you are addressing is to collect data, observe behavior. Maybe it is a too general question, but would you agree that your whole body of work is about going against this utopian concept of McLuhanism, or of Flusser, for that matter – the promises of computer networks to intersubjectively connect free individuals?

DV: The frightening and at the same time interesting part for me is that the exploit is inevitable. Even if it creeps you out, you are part of it. I think it could have been a different story before the early 2000s, before people figured out that there is a lot of money in this business, that it was doomed to become a money-making machine harvesting data. It's a very symbiotic relationship between business and technology, obviously a lot of money is been poured into internet technology in general and, because of that the market, has become a hyper-production.

And that's what we are facing now – it's like a black hole, it had to suck everything in, in order to become ever more efficient in making money and generating return on investment for venture capitalists. That's the sad truth. The fact that technology has become more integrated into our lives and at the same time harder to learn, I think

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that is just an unfortunate side effect of this "evolution." Practically any modification one would want to apply to current computer and networking technology would require a lot of knowledge of hardware, software and of computer science.

Honestly, I really miss the days of the late 80s and 90s, when technology was wide open. If I was to grow up today, I probably would have a very hard time finding entry points. If you try to educate children today about technology based on this multi-layered stack of abstractions that we now have... It oversimplifies technology to an extend that it actually removes it. There's a statement by Steve Jobs, or maybe someone else at Apple, from around 2010 about the design of the iPad:[5] Their goal was to remove the feeling of being confronted with anything, to achieve this seamlessness, this sort of intuitiveness – which is good, definitely, I'm all for technology being intuitive. Already with the desktop metaphor, if one wants to go back as far as that: We always attempt to confront the user with the least. But if you consider the current state of things today – this might have been the wrong move. Because while it allows more people to start using computers, a lot of knowledge has been lost or hasn't been recovered. I think this is something that we are missing these days, that we are lacking. There is a growing divide between our technological advance and our information literacy.

One symptom of that is the difficulties of having to separate truth from falsehood, to simply be aware of the fact that what is displayed on a screen of your device is not necessarily what you would want to believe. But that had become a standard, an assumption, to an extent, turning into a quasi-religious belief. Because we are all told that the computer is right, that data gets results right. And this is something I wish we could change. It is difficult to discuss my work and the work of my colleagues without going into deeper, darker details. That's one of the major challenges I face in general when talking about my own work, mainly because there is a huge techno-political aspect to it. Also, there is a necessary aesthetic dimension, the ways of presenting the work and having to bring that all together so that

5 Editorial note: In an ad for the Apple iPad in 2012 the narrator claims: "We believe that technology is at its very best when it is invisible." Cf. a video montage by the web artist Olia Lialina juxtaposing this ad with a video statement by Marshall McLuhan conducting a warning of technology's "irresistible force when invisible": https://www.youtube.com/watch?v=9gx-zHHItQs&feature=youtu.be.

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it actually works for different kinds of people: for those who come to look at it as a technological exploit, for those who see it as a cultural manifestation, or for those who receive it as a political message – those three components are definitely at play, always.

DI: You mentioned the iPad and the desktop metaphor...

DV: Such an old school thing!

DI: Yes, but still relevant. It made me think about Alan Kay and his team at Xerox PARC in the 1970s who came up with the desktop metaphor. Kay focusing on user experience, including the graphical user interface, also came up with a very early – maybe the first – tablet computer concept, the "Dynabook" (Kay 1972). And this is interesting, because he had the idea that the Dynabook should be an openly accessible computer for basically everyone – in fact that accessible that children would be able to use it. Children should be able to work with it, not only on a superficial level but also on a level that enabled them to learn how to code. The Dynabook wasn't functional, though, it was a mock-up, a thought experiment. Later, Kay and his team would go on to develop the object-oriented programming language Smalltalk as a new way of computing – a "human-computer symbiosis."

DV: But the problem with these things, as well as with interactive media art, for instance, is the sense of: Why? Why would a child come to a computer and try to program it? And "why?" not in a rejectionist way but as in: What would make a child, or anyone for that matter, do something with the computer that is new or not in the user manual?

DI: And not directly rewarding.

DV: Yes. How do you make people start to experiment with computers?

DI: Maybe it's because the Dynabook concept was conceived by Alan Kay, who was himself a tinkerer, who probably got the Altair when it came out and who would take an inherent pleasure in tinkering for granted.

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DV: Sure, it's taken for granted, and this is very often a struggle in the open source world as well: People make software for likes of their own. For instance, how user interfaces for open source software are often unusable, because it's the last thing that has been thought of.

Someone told me that artists are like interpreters. Even back in history, an artist would create an image that would manifest an event or time period for others to look at and enjoy the beauty of the landscape, but also to learn about the time that it had been made in, even if unintentionally. By having to be that interpreter, artists actually try to explain something that they think might be misunderstood. And that maybe helps to motivate people to start questioning cultural or technological artifacts as well – and to conduct their own experiments.

DI: A good call for a good closing sentence! Thank you, Danja, for your time.

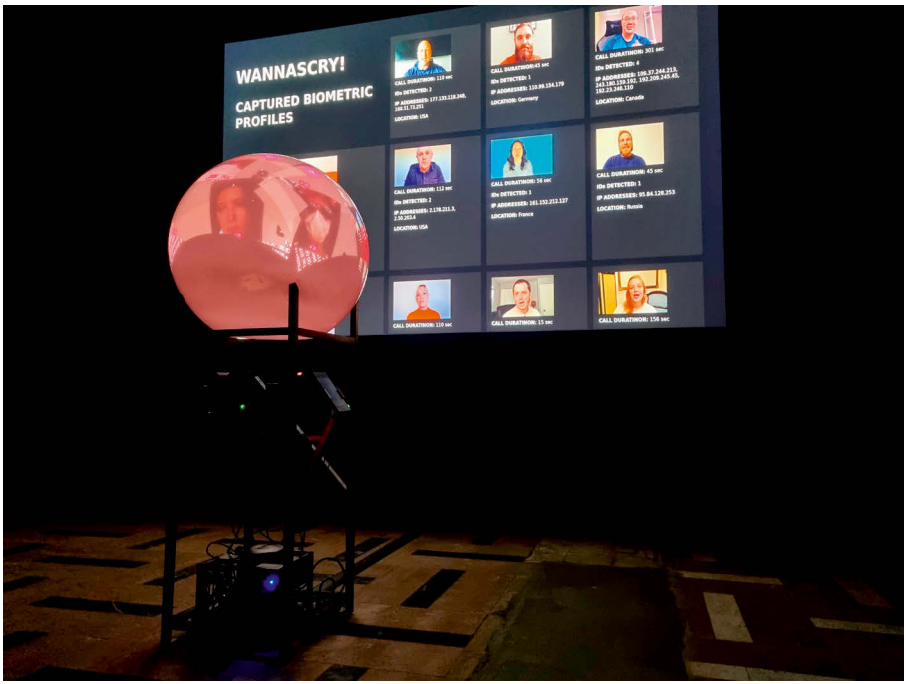

Fig. 1 Danja Vasiliev: WannaScry! at Laboratoria Art&Science exhibition, Moscow (June 2021).

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Digitalization of Art Exhibitions in Times of COVID-19

Three Case Studies in China

Yang Jing and Li Zhenhua

The "digital" paradigm shift in Chinese museums

In 2004, Yang Jing, one of the authors of this essay, was enrolled in the Department of Cultural Heritage and Museology in Fudan University, Shanghai. The program is one of the few of such departments in China. The courses available to undergraduates were quite diversified, covering archaeology, cultural heritage, Chinese art history, anthropology, ethnology, restoration and, of course, museological research itself. Such a variety of courses reflected the different fields in which Chinese museums in the 1990s and early 2000s were operating: antiquities, technology, academic research, business management and cultural heritage. There were two required courses for the museological research branch, one in Museum Management and the other one in Museum Exhibition Design, both dealing, among other things, with the concept of digitization. In the former course, we learned to use a content management database to sort and edit information about artifacts, collected by the Fudan Museum, of Taiwan's indigenous culture. In the latter course, we were introduced to two-dimensional digital drawing tools such as AutoCad to create exhibition/collection floor plans.

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This was in the pre-social media era. Today, terms like "digital museum," "digital art museum," or "digitalization of museums" have been in use for a long time, and they have undergone a paradigm shift over the past two decades. Since digitization of museums is a very large field itself, this paper will focus on digitization of museum exhibitions solely.

"Digital practice" has extended from databases and websites as their domains to online exhibitions, social media and online interfaces for reproduction, research and communication. Digital technology has evolved from a facilitative tool into a complex ecosystem. More and more digitalization works (digital archiving, 360 panorama online exhibition, museum apps) are carried out not by museum professionals alone but in collaboration with actors from IT, digital media, digital marketing and design industries. In our recent interview with the founder of "artexb," an online 360° VR exhibition platform, we were told that such external digital service providers are crucial for the museum industry since most museums still don't have budget for their own in-house production team for digital exhibitions.

At the same time, museums in China are far more diversified, commercialized and branded than before, ranging from traditional ancient art museums to contemporary art museums to local history museums to private collector museums. By 2020, there were 5535 museums registered in the country, including 1710 private ones. For state-owned museums, local governments are their generous funders and supporters. Such museums are often criticized for being built as political vanity projects and lacking basic museum management systems and exhibition services. Private museums, on the other hand, do not enjoy such fiscal privileges, and hence need to constantly explore ways to sustain themselves financially. Therefore, they rely more and more on ticketing, memberships, commercial use of space, etc. Their business models and internal management also underwent tremendous changes driven by the 2008 financial crisis and by the current pandemic crisis.

In *The Museum in Transition*, Hilde S. Hein observes that formal definitions of museums, such as ICOM's "a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches,

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communicates, and exhibits, for purposes of study, education and enjoyment, material evidence of man and his environment" (Hein 2000, 35), can no longer accurately reflect those institutions in reality. These concepts fail not only to express what a museum is but also to clarify what can and cannot be considered a museum in reality. The ways to deal with art exhibitions has undergone huge transformations. Meanwhile the borders between art and entertainment as well as between designated art institutions and spaces primarily intended for mass consumption are blurring. Today, visitors can attend exhibitions in galleries, in malls and sometimes even in zoos. This observation is echoed very well in today's Chinese art-entertainment scene; many important exhibitions are not held in, or by, museums and art spaces but by theme parks and commercial malls instead. Moreover, with social media's pervasive popularity in China, museums now have another competitor – social media networks that deliver art, culture and entertainment information as content.

Most museums in China today have social media accounts. For the art museums among them, a WeChat[1] public account and a Douyin[2] live broadcast are the standard frontend of exhibition news, exhibit content, review articles and related multimedia derivatives. However, technology conglomerates such as Tencent and ByteDance have been able to produce and disseminate cultural and art contents with much better production quality and at lower cost than, e.g., museum communication departments. These are the veterans who may not have a good résumé in the art industry but who definitely have more experience in running social networks and building online communities. Meanwhile, thanks to the regulatory difficulties of copyright control for arts and cultural entertainment works in China as well as

1 WeChat (微信) is a so-called "super app" that contains multiple-purpose functions including messaging, social media and mobile payment. It is developed by Tencent. WeChat public account (公众号) serves as self-public media account for registered WeChat users, on which the owner can push feeds to subscribers, interact with subscribers and provide them with services. WeChat friend circle or Moment (朋友圈) is an interactive platform that allows users to share images, text, and short videos. This is similar to the Facebook timeline. WeChat mini-app, or WeChat mini-program (小程序), are apps within WeChat. Business owners can create mini apps in the WeChat system and other users may install those in their WeChat app.

2 Douyin (抖音) is a video-sharing social networking service owned by ByteDance, the owner of TikTok. Douyin's servers are based in China and the majority of its users are also based in mainland China. It is one of the most popular apps of its kind.

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the huge traffic of the digital highlands,[3] social media accounts avoid the burden which comes with producing, refining and presenting content for the distribution of art. Many content farms use digital properties of museums without permission and don't even provide hyperlinks to the original context of the information. Toutiao, a core business owned by ByteDance, labels itself as a content platform based on machine learning. The company has been in numerous lawsuits regarding content plagiarism since its beginning. Nevertheless, Toutiao not only survived but has become the number one content distribution platform in mainland China. Museums, like other content providers, now find themselves pledging to Toutiao so that their exhibition press release could make the front page on the Toutiao app. Toutiao is just one of the social media hubs that hijacks the content and traffic from museums. The power of these hubs, usually translated from traffic, as well as algorithm-based curatorial practices, put museums in a strange place in terms of how to make themselves visible in the digital realm.

When Haidy Geismar reviewed the research literature on digital museums in 2012, most scholars and practitioners agreed that digitalization could democratize the distribution of artworks, reduce the costs of running a venue, break free from the constraints of space and time and reconnect with visitors and communities. In retrospect, such an optimism is deeply challenged today. One of the major reasons might be that these scholars neglected to include the cost of utilizing digital technology into their prediction of art exhibition.

Haidy Geismar suggests applying actor-network theory (ANT) to understand the challenges of digital museums, placing them within a complex network of changing relationships, such as Web technologies, hardware and software technologies, multimedia platforms and entertainment systems, as well as deconstructing the functions of the art museum itself, its staff and the art system as a whole.

In 2004, when digital museums were in their infancy in China, practitioners were still scattered among digital software realms, like collection management systems and museum website design.

3 "Information Highland" is a term coined by the Chinese artist aaajiao. He defines it as the public space that can hold the most traffic of information exchange, which is often monopolized by the state or tech conglomerates as they possess the most powerful computational capacities.

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By 2020, when online representation of art has become a central aspect of museums in China, museums were already caught up in the ever-changing digital matrix of culture, capital, politics and public opinion; therefore, it is no longer feasible to discuss "museum" as an entity of its own.

To better understand this challenge and the ways different museums are dealing with it, I interviewed three groups of practitioners in digitization of museum content and digital exhibition practice: Tencent's Cultural Creation Platform in collaboration with the Dunhuang Academy; CEF Experimental Images, an online video art cinema using WeChat's in-app mini-program; and Screenroom, an art group dedicated to the digitalization of art systems in China, also via social networks such as WeChat groups and mini-apps. The practitioners in these cases are at different places in the art world, exploring the possibilities of digital museum exhibitions from their own professional perspectives and visions of the future. I am also including in this article a reflection on my own exploration of making artwork into a video-game narrative with artist Alan Kwan and collector Syvail Levy, to provide an inside account of the daily challenges we have to tackle while making art accessible online.

Reskin Dunhuang Mural, Tencent + Dunhuang Academy

In April 2020, the "Dunhuang Animated Series," a collaboration between Tencent Pictures, Tencent Animation and the Dunhuang Research Academy[4] (hereafter DRA) was featured on the "Dunhuang on the Cloud," a WeChat app. In this app, users can watch five episodes of an animated series which makes use of enhanced digital copies of the famous murals found in the Dunhuang caves covering 46,000 square meters and dated from the 5th to the 14th centuries, as well as participate in dubbing the series. In addition to the vastly popular WeChat platform, Tencent's multiple outlets can also be used to watch related videos.

According to the project manager of Tencent Dunhuang Research Institute project (hereafter TDRI), the project started in 2017

4 Dunhuang Research Academy is a complex academic institution based in Dunhuang, Gan Su, China. It preserves, excavates and investigates Dunhuang art, as well as curates and exhibits Dunhuang art artifacts. It is one of the first-rank national museums in China.

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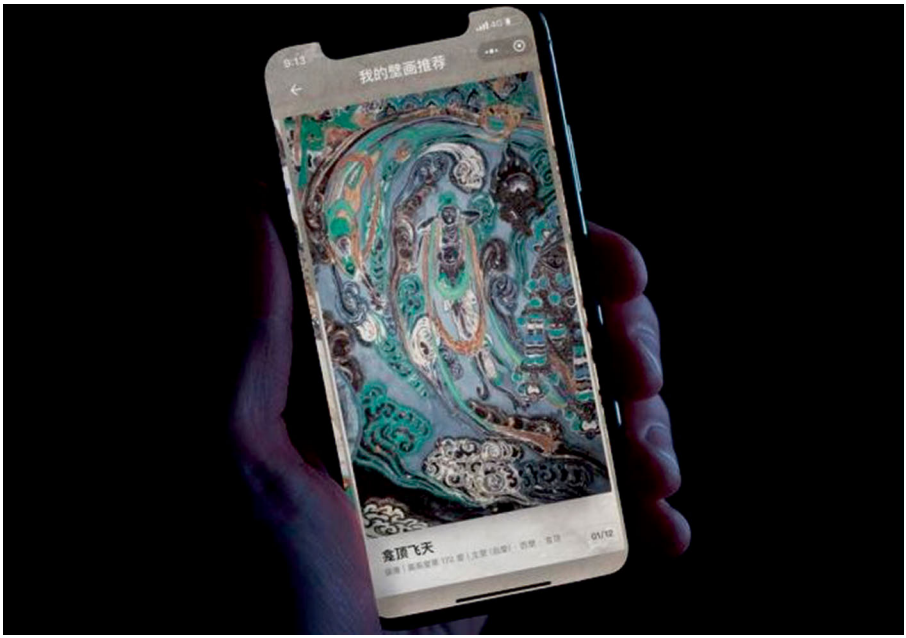

Fig. 1 "Dunhuang on the Cloud," Wechat app.

after the Dunhuang Research Institute and Tencent signed a strategic cooperation plan. Tencent's team carries out its own creative interpretation of the DRA archaeological excavation archive. In the animated series, for example, researchers from the DRA ensured the accuracy of the content, while Tencent's team took responsibility for restoring digital versions of selected murals and then "revitalizing" the cultural heritage in story scripts, plot settings and dynamic representation, adding anecdotes and vocabulary derived from contemporary culture and entertainment.

Dunhuang animated drama is the team's latest product. Before this, the team had also implemented various campaigns inside the WeChat app "Dunhuang on the Cloud", featuring digital mural exhibitions, Dunhuang beast–guardian blessings, Dunhuang wet wipes products sales and Dunhuang digital supporters.[5] The specific design works in these campaigns made use of familiar museum

5 Dunhuang beast guardian blessings, Dunhuang wet wipes products sales, and Dunhuang digital supporter are all campaigns that feature graphic and religious elements of Dunhuang art in a commercialised manner.

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expertise, such as data archiving and classification, provided by DRA. Additionally, Tencent's team contributed their expertise in user research, interaction design, branding and distribution matrix.

Labelling itself as a culture and entertainment creator, Tencent is well experienced in pop culture such as K-pop, C-pop, reality TV shows and most importantly, mobile games. It is therefore not surprising to see that the "revitalization" of the Dunhuang mural is achieved through reskinning the original form (cave mural) into a popular format: animations of high-quality mural elements in contemporary vocabularies. Royal musicians of the Tang dynasty became a girl band and Buddhist goddesses became a playable hero in mobile games. Digitalization is achieved in its highest commercial value and highest audiovisual quality thanks to a large capital investment.

This cooperation belongs to a larger strategy – Tencent's new cultural creation plan formed in 2018. It aims at not only to digitize museum content, which demonstrates the company's goodwill for public interest but also combines museum IP management with Tencent's entertainment conglomerate. Dunhuang, like *Journey to the West*,[6] is an important cultural and entertainment IP that can be exploited for commercial consumption in a pan-cultural cross-media fashion. The cultural value is directly translated into commercial value. While content in "Dunhuang on the Cloud" is free for all users, derivative works of Dunhuang images in movies or games, however, amount to a lucrative revenue stream for Tencent later on.

DRA, in cooperation with the City University of Hong Kong, co-produced "Pure Land AR" by the artists Sarah Kenderdine and Shao Zhifei. Here, digitization emphasized interaction, immersion and virtualization, using VR technology to simulate the actual experience of visiting the Dunhuang's Mogao Cave, part of a cave network in Gansu Province; Tencent's Cloud Dunhuang on the other hand focuses on translating cultural heritage into commercial platforms and languages (technologically and linguistically). Such translation is much easier to circulate on the Chinese internet, social networks in particular. From the perspective of ANT, this is the result of a collision between Dunhuang art and Tencent networks: the former

6 *Journey to the West* is one of the four great classical novels of Chinese literature. Stories from this novel have been adapted into modern films, TVs and video games numerous times in and outside of China.

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intertwined with museum spaces and VR technology, the latter with social networks and gamified interactive technology.

In terms of visitor numbers, the millions of users of the Cloud Dunhuang series is a huge success for the museum industry. Centre Pompidou's video game *Prisme 7*, launched in the same month, is currently receiving a lukewarm response on Steam in terms of downloads and user reviews. Such reception is actually common for game art or museum gamification in recent years, due to the fact that the developing institutions do not have an advantage in terms of user experience and user penetration. The main publicity for such products still remains the art scene. Tech companies like Tencent could easily fix these problems with highly skilled professionals and a effectively penetrating social network matrix.

Not all art institutions are able or willing to carry out such a "revitalization" attempt. In addition to IP value and institutional responsibility, the "timeliness" of the museum exhibition and collection per se is also one of the criteria for cooperation. Antiquity museums are less restricted in terms of copyright issues. In contrast, museums that collect contemporary art have obstacles as the artworks were created within a contemporary context and hence do not need to be "revitalized" digitally.

Copyright protection and viewer experience enhancement: CEF Experimental Video

In 2019, I visited Hong Kong's Tai Kwun Museum (Hong Kong Centre for Heritage and Arts) for the exhibition "Contagious City, Far Away, Too Close," curated by independent curator Guo Ying. It featured ten artists and art groups exhibiting works that "explore the psychological and emotional dimensions of disease and contagion, particularly in relation to people and their ways of life" (Tai Kwun 2019). The work of artist Chow Yu-Cheng was particularly impressive. He designed an interactive olfactory installation that evokes Hong Kong people's everyday associations with disinfection and personal hygiene measurements. The playful architectural narrative of the UK-based artist group Blast Theory, which was based on accounts of real guests of the hotel where SARS broke out in Hong Kong, also engaged visitors' visual and auditory senses.

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In 2020, I saw the title of this exhibition again on a virtual film ticket shared by a friend on WeChat: A QR code led to CEF's WeChat app "Experimental Image Centre," which was offering a film exhibition on the app's main column "Online Cinema." It featured eight video works selected by Guo Ying. In order to watch these videos, one needs to subscribe and pay to become a member. Once one clicks on the works, one is taken to a separate page to view or leave unlimited comments for the duration of the exhibition.

Guo Ying explains that this is the first time she used online cinema to curate an exhibition. It fulfilled her long-held belief that video works should not be exhibited in an art museum or art exhibition setting. She believes that video art needs a suitable viewing environment, rather than being placed in a white cube for people to stand and watch. However, online cinema also challenges established curatorial practices, apparent in the difficulties in showing split-screen works, for example, or video installations and works like the ones described above that experiment with other forms of architecture and sensory experience in addition to the audio-visual level.

Fig. 2 Chou Yu-Cheng, "Wiping, Perception, Infection, Disinfection, Education, New Habit," 2019, Tai Kwan Museum.

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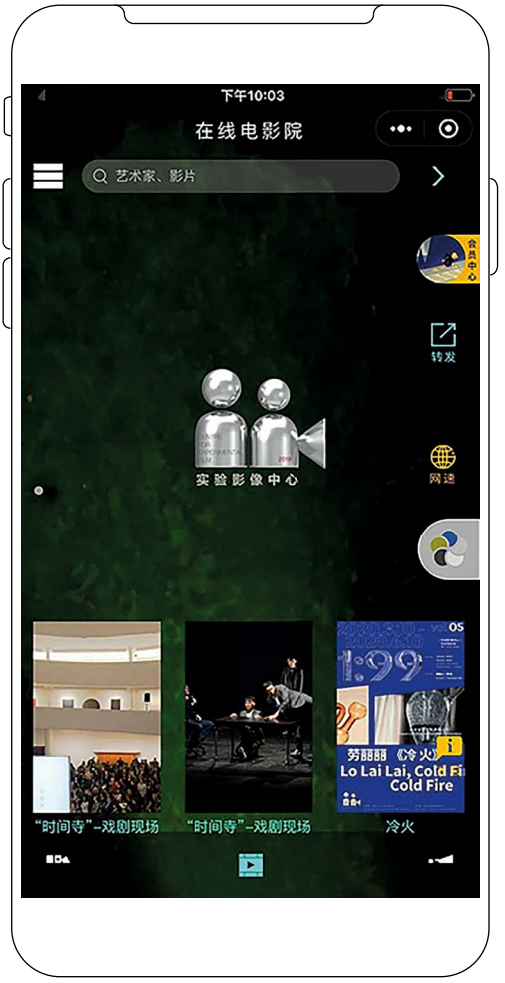

Fig. 3 CEF WeChat app.

Artist Chen Youtong, the founder and director of CEF, also shares these views. CEF uses mobile internet to exhibit artworks while guaranteeing copyright. Artists hence feel secure enough to publish their work on the internet. Like a museum with permanent and special exhibitions, CEF's online content has special exhibitions and permanent databases. The latter are long-standing collaborations with video artists to store and broadcast important video works from their creative careers. CEF provides technical support and maintenance,

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copyright representation and copyright protection services, with the goal of developing new ways of broadcasting video art exhibitions rather than replicating the practices of the physical space.

Chen Youton believes that the viewing experience should be created not only by his technological development team but also by audiences. Hence, audiences can make use of screen projection technology when using CEF products. CEF functions as a database of video art content and allows paid subscribers to choose how to present and view content. Their next experiment is to invite users to cast video content from within the WeChat app onto a large interface (wall, projection curtain, etc.) inside an art museum with stable internet connection and to invite friends to watch together. CEF's WeChat app has been in use for several months now and has begun to accumulate high-quality content as well as comments from users. Chen Youtong introduced the use of WeChat in order to attract more users. He recalled that, in recent years, similar art institutions have tried to build apps independent of WeChat, but many were abandoned due to lack of traffic. In fact, he and his team plowed deep into WeChat a few years ago and released apps like "Culture Museum" or an app for the "Inner Ear Festival," a music festival. Such precipitation and continuance helped the team to build a user-friendly and comprehensive mini-app. In fact, CEF has the largest number of staff among the teams that I interviewed. Their employees come from a wide range of industries, and the tech team is their core.

Chen Youtong's frame of reference was not only museums but also mainstream video streaming platforms, including Tudou in the early days and Tencent Video now. He pointed out that in addition to traffic, art institutions face the challenge of digital copyright. Compared to other freely downloadable products such as video games, the scarcity of artworks still needs to be achieved through control of copyright, which may be subverted in the future art scene. The unwillingness to make artworks ready to watch regardless of time and place is an issue CEF deals with on a daily basis.

Community building: The Screenroom

Unlike the above two cases, Screenroom is not interested in transferring offline content into digital code and in putting it on a virtual platform, but rather the goal is to encourage and facilitate artworks and art activities make on the "screen" from their birth. The screen

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here is understood as a human-computer interface, which could be a real LED screen in a physical exhibition or the screen of one's mobile phone.

I've worked with Screenroom before and witnessed how one of the founders, Cedar Zhou, induced exhibition visitors to become art creators. Screenroom also based itself on WeChat via mini-app. This app's backstage is a database collecting artworks generated and submitted on its frontstage – users only need to scan a QR code in order to upload their work as an entry onto this mini-app. They can also browse through existing artworks and auction them inside the app. In this way, Screenroom collected original artworks (usually images and videos) and their collectors. Gradually, Screenroom has generated a large number of creators and buyers.

During the COVID-19 pandemic, Screenroom carried out several art events that grew entirely in its WeChat circle of friends. One of them was "Planting Trees on Screen." It was a collaboration with Beijing Times Art Museum. After Women's Day in 2020, several staff members of Screenroom were discussing which holiday coming up next to promote, and interns suggested the Chinese Arbor Day. After searching for the keyword "tree" in Screenroom's art database, they found quite a few tree-related works out of more than 10,000 user artworks. Considering most people now spent their time indoors and were unable to plant trees or to even see trees at all, Screenroom launched a call for participants to plant trees on their screens. They encouraged them to plant them on their phones through photography, drawing, collage and other methods, and upload them to the Screenroom app. Later in the project, the Times Art Museum invited Screenroom to participate in the exhibition "Recovering in Art" and selected several Screenroom users to upload their works for the physical exhibition in the museum, thus transferring online work to an offline environment.

Another activity leans towards community operations. Susana Smith Bautista's study *Museums in the Digital Age* (Bautista 2014) draws on theories of cultural geography to analyze this transformation: On the one hand, digital museum practices detach the visiting experience from the architecture and location of the onsite museum but offer possibilities of resetting the exhibition or artwork in other contexts: native communities, historical cues and everyday life. On the other hand, digitization transforms geographic locations into

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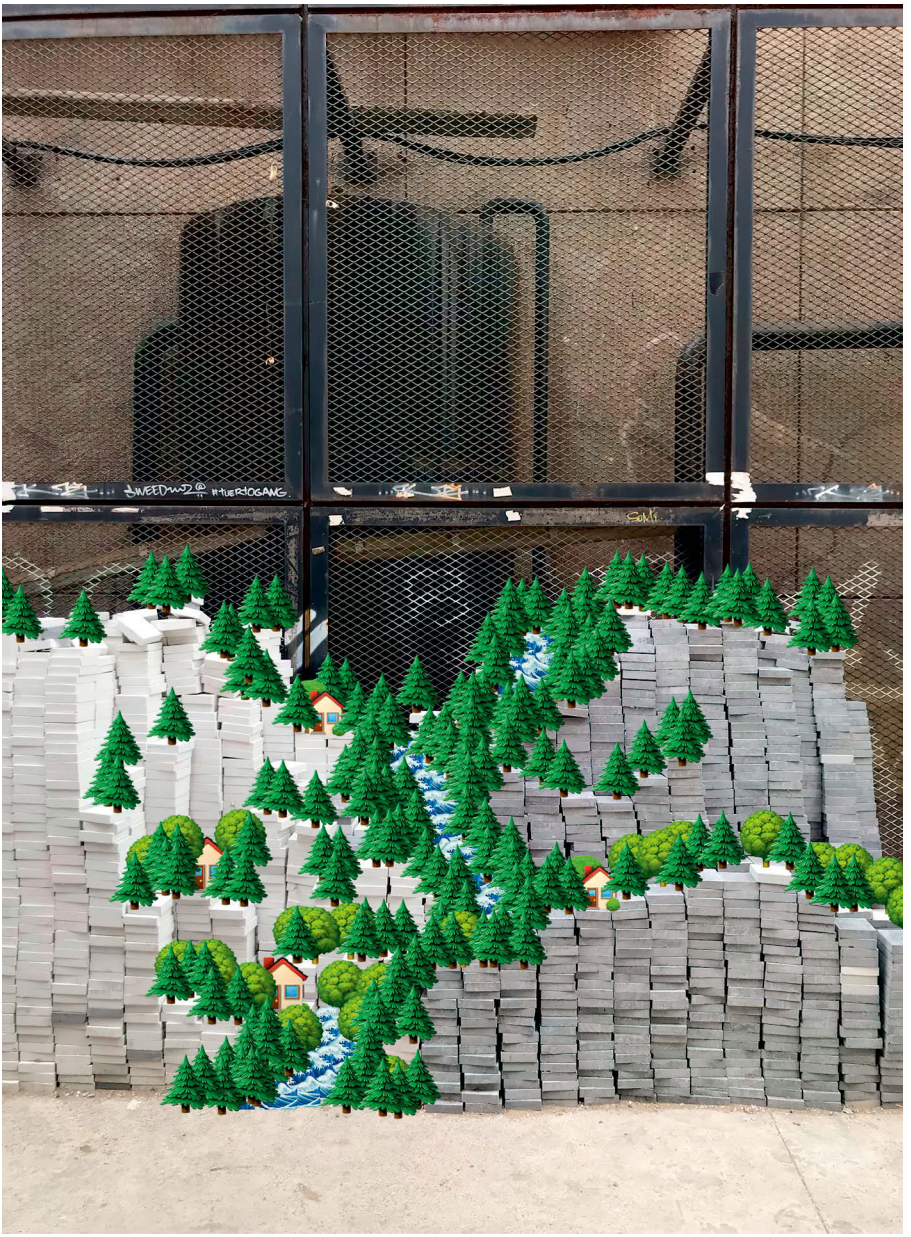

Fig. 4 Wang Licheng, "Landscape," still image, published on Screenroom WeChat mini app, 2020.

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points of social connection, transforming the definition of place from objects and physicality to events and activities. The Screenroom "card-punching" campaign created just such a communal experience, "uploading a work of art every day in the time of epidemic." In a WeChat group of 402 people, many resilient participants clock in daily to create various types of artworks, and there are also various group members who frequently share all kinds of online content that touched them during the clocking-in period. In fact, every time Screenroom starts a new project, a WeChat group would be created (sometimes even two or three). Every group is open to interested WeChat users who come in via QR code or friend recommendation. These dynamic group scenes, especially in times of COVID-19, function as communal spaces like museum openings or museum cafes where people could mingle and exchange ideas – and sometimes even result in future collaborations.

According to Zhou, Screenroom has been contacted by quite a few art museums to digitize their exhibition, but some are still limited to the idea of replicating offline artworks for an online environment. For such kinds of digital exhibitions, visitors must consciously visit an online museum before they search for and access relevant content. In addition, due to a lack of technology and manpower, the production level of the online content is unsatisfactory, leading visitors to switch to more mature commercial entertainment accounts. Museums also suffer from traffic anxiety – thousands of daily visitors are actually a good enough achievement to celebrate in physical operations, but on social networks it's intuitively easy to get discouraged by the 100,000 plus figures that other, popular culture content can easily rack up.

Copyright, flow, platform – A new game

Many museums across China are gradually opening again during the fall of 2020, but the psychological aftermath of the pandemic as well as travel controls and the broader context of economic recession means that, at least for a while, it will be difficult to see big production exhibitions again.

At a time where online content is proliferating in museums everywhere, the negative aspects of closures and layoffs are also reported. The various attempts to digitize museums are undoubtedly the efforts of practitioners and have exposed them more directly to the multiple challenges of copyright, traffic and platforms in general. It is worth

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Fig. 5 WeChat group of punching card users from the Screenroom.

noticing that all the interviewees mentioned the use of Tencent's WeChat in their work. Tencent itself also participated directly in the digitalization or revitalization of art and cultural productions. With the omnipresence of WeChat, it is understandable why most practitioners would choose the app as an environment to develop their own products and services. However, choosing Tencent also means choosing a particular burden of censorship: Firstly, all contents uploaded onto Tencent platforms would go through content censorship

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that follows the regulations and rules of the CCP government. Secondly, even if content providers manage to make it through the censorship system, whenever a violation of the regulation is reported, the content and sometimes even the account would be deleted. Thirdly, WeChat has its own algorithm which records and presents content provided by individual accounts. This means that if not favored by current trends, even if one uploads content, it is still possible that it might not be seen at all.

The practitioners interviewed for this essay, regardless of their specific position within or outside the system, have already been working in the digital field for years. Many of them understand the commercial difficulties of the exploration phase and are ready to calculate the rewards from a long-term development perspective. This is the tricky part of the seemingly "plug-and-play" digital timeline, which has a long history of its own and which requires serious investment and long-term planning.

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a.username? – A Profile Without Qualities

Exploring Amazon through Art and Literature

Søren Bro Pold and Christian Ulrik Andersen

How to understand and read Amazon? Where to start the reading of this current version of the "technologizing of the word" and which kind of human character does it result in (Ong 1988)? This article will explore these questions through focusing at Joana Moll's *The Hidden Life of an Amazon User* (2019), with inclusion of other artworks, and Robert Musil's novel *The Man Without Qualities*, published 1930–1943.

Amazon art

Amazon has grown from being an online bookstore to an everything-store – and to a general networked platform that uses the sale of physical goods to map users' choices while producing big data management on a major global scale. The integration of user-monitoring into platforms and numerous devices, from Kindle e-reader to tablets and media players, voice interfaces and security devices, has become an increasingly important part of their business strategy as the leading online retailer. It has been argued that Amazon and its e-books threaten the printed book, and while Amazon certainly has killed a

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great number of physical book stores and forced its business models on the publishing industry, it is nevertheless interesting to consider Amazon as a continuation of certain aspects of big market book trade rather than a break from it (Striphas 2011). Seeing Amazon as the latest incident of the "technologizing of the word," Walter J. Ong's notion provides opportunities to discuss how it continues and reinforces certain monopolistic strategies around controlling the publishing market.

Several artists have explored Amazon with a critical eye and focused on the Kindle as a publishing platform, including how it reads the readers and monitors their reading in a process of controlled consumption. For instance, in *Dear Jeff Bezos* (2013/14), Johannes Osterhoff sent automated emails regarding his Kindle reading habits to the Amazon's CEO, echoing and making visible the kind of monitoring already happening in the background of the Kindle interface, and in *The Project Formerly Known as Kindle Forkbomb* (2013), Ubermorgen.com deployed a "forkbomb" attack on Amazon by automating e-book publishing based on YouTube comments, overflowing Amazon with seemingly worthless trash-books that yet produce a certain raw realist style through its montage of YouTube comments as dramatic dialogues (Osterhoff 2013-14; Ubermorgen.com 2013; Andersen and Pold 2014). Silvio Lorusso and Sebastian Schmieg took a different look at Amazon with *Networked Optimization*, a series of three crowdsourced versions of popular self-help books where the only thing readable are the popular highlights underlined by the many Kindle users. They printed and published the books *The Seven Habits of Highly Effective People*, *The 5 Love Languages and How to Win Friends & Influence People* on the Lulu.com print-on-demand publishing platform. As they argue: "Among the books with the most popular highlights, there is a striking number of self-help books. This points to a multi-layered, algorithmic optimization: from readers and authors to Amazon itself. Harvesting its customers micro-labour, the act of reading becomes a data-mining process" (Lorusso et al. 2013). If the books were not already banal, they now become reduced to mostly self-evident gibberish when treated like this. The project demonstrates how data mining of human reading potentially affects textuality. In the process of accumulating and examining what the readers mark as highlights, the text gets reduced to banality, "hit"-phrases of the lowest common denominator. Lorusso also hosts the Post-digital Publishing Archive

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which includes several other artistic projects, including Jesse England's *E-Book Backup* (2009), where she photocopied the Kindle version of George Orwell's *1984*, thereby highlighting the lack of ownership and rights to copy, lend and re-sell Kindle e-books secondhand (Lorusso 2013–; England 2009). They all serve as good examples of artworks that reflect Amazon's algorithmic apparatus and its highly commercial, algorithmic post-publishing process.[1]

Plotted by amazon.com

Joana Moll's *The Hidden Life of an Amazon User* contributes to this artistic discourse on the exploration of Amazon's reading of readers, but unlike the other projects presented here, it does not focus on the content of Amazon's platform or the surveillance capitalism embodied by the Kindle. Instead, it draws attention to the first thing a user meets when buying a book: the Amazon web interface. As Moll presents her work, it looks into what happened when she purchased the book *Jeff Bezos: The Life, Lessons & Rules for Success*, which is listed as written by the collective "Influential Individuals" and seems like another book ready for Lorusso's project of highlighting the Amazon apparatus' production of banality. In the project, Moll does not read the book, despite its promises to "learn from the richest man ever." Instead, she reads the twelve different interfaces that she has to go through in order to buy the book. More specifically, she focuses on the large amounts of code, normally invisible to the user as it is running in the background, that organizes the site and records the user's activity. To order a rather banal 65-page paperback, 8,724 pages of complicated code is downloaded and executed by her computer, which hints at the fact that what is printed on the pages of this book is probably the least interesting text distributed here; or to put it differently, it might only be the beginning of a great many coded scripts. In fact, throughout the 87.33 MB or 8,724 pages of printed code, she records 1,307 different requests to scripts and documents that presumably contribute to the profiling of the user.

1 The apparatus is here understood as the full material, technical and commercial publication production process. Walter Benjamin argues that authors should care about this apparatus and "to the utmost extent possible" change it (Benjamin 1996, 774; Andersen and Pold 2018, 23ff.).

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How can we read this text in ways that include the enormous subtext that contextualizes and produces it? How can we understand Jeff Bezos' "life, lessons & rules for success" beyond superficial clichés like the following popular highlight of the book summoning up the rule "Gather the right people around you": "Therefore, if you want to live your best life and achieve your dreams, surround yourself with people who are likely to help you achieve that dream" (Influential Individuals 2018, Location 497)? Though not many people have cared to read this book (it currently has only a maximum of 32 highlights and the above quotation has 29), it is listed as #680 in Business Professional's Biographies and #2,720 in Success Self-Help at Amazon.com. This indicates that the printed text in the book is far less interesting than the apparatus of its production. Therefore, we will in the following read Moll's work as a way of reading *The Life, Lessons & Rules for Success* that includes a reading of the apparatus behind its production.

The title of Moll's work resembles the title of a modernist novel about a contemporary "man without qualities," and its many pages suggests that life under Amazon has become even more absurd than life in Robert *Musil's Kakanien*.[2] If we could only read the many pages that our computers execute, we would realize that Moll's work is the scripted story of current readers and how they are read by big data and big software corporations such as Amazon. As Wendy Chun argues, online readers are currently controlled in their reading and, similar to how characters are controlled by the author in novels, readers become "characters in a drama putatively called Big Data" (Chun 2016, 94). Like any shopping mall, also Amazon is a "scripted space" where the customer's experience is dramaturgically framed by the system architecture so that the she or he has the feeling of being the central character in the script.[3] The interface then becomes a composite that seals of the complexity of the "algorithmic mall-apparatus"; a safe environment made for the user to indulge in the pleasures of online shopping.

2 You can get Robert Musil's *The Man Without Qualities* vol. 1 for $13.04 and only $5.00 for Kindle on Amazon.

3 The urban theorist Norman Klein uses 'scripted space' to describe the experience of shopping malls and other spaces that produce illusions though various effects. He also compares the experience of this to the experience of an interface (Klein 2004) see also (Andersen and Pold 2018, 91).

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Consequently, and in a literary understanding, *The Hidden Life of an Amazon User* makes sense as the story about how we all become characters in Amazon's drama; but it is a much harder read than Musil's 1,700 unfinished pages of *The Man Without Qualities*, and even for a code reader it is hardly readable in its fragmented totality. Whereas it was once possible to largely understand webpages through reading their code, this code refers to an entire infrastructure inside Amazon's servers to which we do not have access. Presumably, the 87.33 MB or 8,724 pages of code that we download, and which includes 1,307 requests to scripts and APIs, are only the tip of a much larger iceberg of code within the Amazon cloud. As already Susan Leigh Star pointed out in relation to technical infrastructures, "[i]t takes some digging to unearth the dramas inherent in system design creating, to restore narrative to what appears to be dead lists" and it might be "stiflingly boring" (Star 1999, 377, 378). The functioning of infrastructures mainly gets noticeable once the infrastructures break down, since normally we do not want to deal with them but just want them to work like sewers or the electrical grid. In other words, in order to hide their effects on us and function in the background, infrastructures are hidden on purpose, and in the case of Amazon, it is hidden how we as users are endlessly profiled. It seems fair to argue that Amazon does not want us to know the extent to which we become characters in their big data drama. We might enjoy Amazon's ability to recommend Franz Kafka to the readers of Musil through their profiling of our choices of reading and buying, but we do not necessarily agree with of all the tracking the company does to make such a recommendation (which would be straight forward for any slightly knowledgeable book seller), nor do we accept whatever else they do with our data. In fact, we do not even know what they are doing and we have no way of knowing; we can only look at the 8,724 pages of code gibberish and speculate on what lies beyond.

a.username?

Let us call the main character of this big data drama, "a.username?" since this variable is found 18 times in the script. Let us use this as a name for what we become in the big data drama, a character or profile without qualities, other than what is filled in to it by Amazon's profiling of us, while we are even more clueless than Ulrich, the main character of Musil's great novel. If a.username?

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is a profile without qualities generated by the very purchase of *Jeff Bezos: The Life, Lessons & Rules for Success*, it is because it's purely rendered by the quantification that runs Amazon's business software. Amazon's algorithms do not run on the content or quality of their books or other goods but purely on the lists, patterns and arrays that they generate through relations to other editions and associated companies, like the audiobook "free with your audible trial," "used – like new" books sold from the network of third-party sellers on the "Amazon Marketplace," similar books "frequently bought together" like *Bill Gates: The Life, Lessons & Rules for Success* and *Warren Buffett: The Life...* or "sponsored products related to this item." Neither does Amazon's algorithms operate on the users' proper reading, what they get out of reading the book, but only on the reading behavior, consumption and purchasing, highlighting and speed if they use the Kindle e-reader software and/or hardware.

The *Jeff Bezos* book is clearly a product of the Amazon infrastructure apparatus or probably even a speculation on it and in it, exploiting its very name and CEO to get a quick gain. Even if its "top review," written by the apparently trustworthy "The Rebecca Review" (a "top 500 reviewer" and "top contributor" in "jigsaw puzzles"), rates the book five stars, Andrew Z from UK gets more to the point in his one-star review: "This is not a 'book' but rather a booklet (...) frankly being a rip off (...). It would be shame if *Jeff Bezos* as an entrepreneur is as shallow as this book and I can see why the authors have disguised themselves under 'Influential Individuals' alias..." The Jeff Bezos book and other similar books by "Influential Individuals" come uncannily close to the forkbomb books produced by Ubermorgen.com in their project of flooding Amazon. However, "Influential Individuals" play the game more directly by attaching themselves to heroes of American corporate culture like Elon Musk, Steve Jobs, Donald Trump and Jeff Bezos. In this way, *Jeff Bezos: The Life, Lessons & Rules for Success* demonstrates how Amazon's apparatus even undermines the quality of their own brand and CEO by reducing Jeff Bezos to banality. Everything is reduced to data quantities in the construction of the Amazon market and books like this are simply products of this market game. In this case, in fact, nothing less and nothing more, which is the strange quality of this shallow booklet as it is assembled as a found object in Moll's *The Hidden Life of an Amazon User*.

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From A9 and Whispernet to the Parallel Campaign

How can we understand Amazon and its apparatus? Amazon is currently one of the four biggest technology companies that is known for its disruption of well-established industries within retail and technology. While it started in 1994 as an online bookstore, it is currently the world's largest online marketplace, AI provider, live-streaming and cloud computing platform. Like the proportion between the user-interface and the large code base behind, or the shallow book and how it is a product of the giant apparatus, Amazon for most users is largely invisible, hidden in suburban warehouses, as the cloud infrastructure behind the streaming of music or television series or behind the Echo voice assistant. As pointed out by Ed Finn, "[c]ompanies like Uber, Google, and Amazon are building their empires on a particular style, an ethos of simplification that requires abstracting away complex and messy details in order to deliver a reliable and persistent set of services. These companies are engaged in a form of algorithmic arbitrage, handling the messy details for us and becoming middlemen in every transaction." But even though Amazon abstracts away complex and messy details in order to create a smooth shopping experience, this process requires an enormous infrastructural apparatus, "an entire worldview, built on an algorithm": "Amazon's transformational algorithm involved not just computation but logistics, finding ways to outsource, outmaneuver, and outsell traditional booksellers (and later, sellers of almost every kind of consumer product)" (Finn 2017, 97, 20).[4]

This idea of a world view of disruption that, by way of algorithms, outmanoeuvres the traditional book retail business leads us back to Musil. For what are the characteristics of these network maneuvres? Even though Musil died in 1942 and could not predict contemporary platform culture, his novel can be read as a complex narrative of the incoherence between the modern and conservative powers in Vienna and of how rational, scientific, quantitative data undermines

4 This Amazon tactic of outmaneuvering and outselling was also documented by the hearing before the US congress on July 29, 2020, where Amazon was under fire for "allegedly using sales data from its third-party sellers to figure out what new products to sell and how to undercut those same independent shops on its platform" (Fung et al. 2020).

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qualitative coherence.[5] In *The Man Without Qualities*, the main character Ulrich becomes the leader of the so-called "Parallel Campaign," which is worth comparing to Amazon's algorithms, including its product ranking algorithm A9 and its Kindle network, synchronizing and monitoring utility Whispernet.

"The Parallel Campaign" is the novel's name for the 1913 planning of a future campaign leading to the giant celebration of emperor Franz Joseph's 70 years reign due to take place in 1918, and of Austria's alleged political, cultural and philosophical supremacy. However, as a result of its incompetent role on the losing side of World War 1, the Austrian-Hungarian dual monarchy collapsed in 1918, and Franz Joseph actually died in 1916. The Parallel Campaign remains a very lofty speculation in the novel. On its birth the Parallel Campaign is described as a "vague, thrilling feeling of joy and expectancy" uplifting the mind as "a small, brightly colored child's balloon that had broken loose and, shining gloriously, was floating upward toward the sun. And in the next instant it burst." Seemingly knowing what later happened, the narrator describes the Parallel Campaign as an affection with no real content. As the novel continues: "This is why great, stirring ideas consists of a body, which like the human body is compact yet frail, and of an immortal soul, which constitutes its meaning but is not compact; on the contrary, it dissolves into thin air at every attempt to grab hold of it in cold words." Later it is described as incorporating the particular bureaucracy and spirit of Austria with "a subtle barb aimed at Germany" as a "'landmark,' 'a splendid show of vitality,' 'a commanding role on the world stage that would have a bracing effect on the situation here at home.'" The quotes are references to the sayings of one of the main organizers, Count Leinsdorf, arguing that these sayings were so well phrased that "one could no

5 Already the very first paragraphs of the novel demonstrate this with its combination of metrological data and the feeling of the weather: "A barometric low hung over the Atlantic. It moved eastward toward a high-pressure area over Russia without as yet showing any inclination to bypass this high in a northerly direction. The isotherms and isotheres were functioning as they should. The air temperature was appropriate relative to the annual mean temperature and to the aperiodic monthly fluctuations of the temperature. The rising and setting of the sun, the moon, the phases of the moon, of Venus, of the rings of Saturn, and many other significant phenomena were all in accordance with the forecasts in the astronomical yearbooks. The water vapor in the air was at its maximal state of tension, while the humidity was minimal. In a word that characterizes the facts fairly accurately, even if it is a bit old-fashioned: It was a fine day in August 1913" (Musil 2017, 3).

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more refuse them than refuse a call for every man who desired the Good to step forward." However, the Parallel Campaign was not yet in existence and Count Leinsdorf had no idea what form it would take. In other words, it was pure networking of influential nodes and links: "It meant that even at this stage, without anyone needing to have a clear conception of anything, a network of readiness that covered a great many connections was in place" (Musil 2017, 113, 114, 143, 144).

Amazon's algorithmic apparatus has a similar character of splitting the quality of books, goods, users, etc. for a lofty coherence created by data points, monitoring, ranking and recommendation algorithms, etc. Only people inside Amazon know exactly how all the algorithms work and cohere, but as argued by search engine optimization (SEO) consultants, the A9 ranking algorithm determines the rank of products through measuring, e.g., relevancy, click through rate, sales performance rate, customer feedback, product reviews, etc. (Dod 2020; Lynch 2020). The algorithms all relate to monitoring users/buyers and presenters/sellers behavior, but obviously none of them present a qualitative description. It is an algorithmic market, which is plotted by the 87.33 MB that a random Amazon user downloads, how they interact with the profiling of an Amazon user we are calling a.username? here and with the big codebase in Amazon's cloud. This algorithmic market is a game, played by anybody who wants to sell something through Amazon, with rules laid out by interpreters such as PR managers and SEOs of which the ultimate result might be shallow booklets such as *Jeff Bezos: The Life, Lessons & Rules for Success*.

Robert Musil's novel is the sublime portrait of a European reality on the brink of World War I, through literary means demonstrating some of the clashes between regressive and modernistic perceptions of the modern reality of 1913 Vienna that partly led to the war. In the more or less blind belief that it will change the rules and lead to new sovereignty, the Parallel Campaign resembles Amazon's transformational algorithm and a company praised by entrepreneurial commenters who argue that "[n]o other organization in the world better embodies the power of audacious and continual disruption than Amazon" (Furth 2018). What is really inside the Amazon warehouses, how they treat their employees, subcontractors or users and how their algorithms work is hidden behind the current Parallel Campaign of endless disruption.

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Amazon still grows and the megabytes of nonsense are executed while we grasp for sense when entering our lives into a.username?. In Musil's novel, Ulrich, the man without qualities, is characterized in a way that today seems like a perfect description of a.username? and his or her profiled brothers and sisters:

> [But] today responsibility's center of gravity is not in people but in circumstances. Have we not noticed that experiences have made themselves independent of people? (...) A world of qualities without a man has arisen, of experiences without the person who experiences them, and it almost looks as though ideally private experience is a thing of the past, and that the friendly burden of personal responsibility is to dissolve into a system of formulas of possible meanings. Probably the dissolution of the anthropocentric point of view, which for such a long time considered man to be at the center of the universe but which has been fading away for centuries, has finally arrived at the "I" itself, for the belief that the most important thing about experience is experiencing, or of action the doing, is beginning to strike most people as naïve. (Musil 2017, 158–59)

Books and other goods get sent, we read and are read, we click, stream and pay, our qualities are emptied into the variable a.username?, and Jeff Bezos collects the fortunes as the retail business and local shops are disrupted and outmaneuvred. As consumers, we do not just pay for the books and other goods we purchase, but also for the download and running of the extensive code on our devices. Even though we do not see them on our screens, all of these infrastructural elements are real and have effects that, as demonstrated in *The Hidden Life of an Amazon User*, can be counted in MB, Watt and kcal. In other words, besides grabbing our data and disrupting our qualities, Amazon also grabs our electricity, and both our consumption and Amazon's consumption produce carbon pollution. In fact, Amazon Web Services (AWS) are among the worst polluters with only 17% clean energy and 30% coal consumption and "continues to remain among the least transparent in revealing the energy footprint of its rapidly expanding global infrastructure" (Cook 2017, 47). We even

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pay for the hidden script and its harvesting of our qualities, since a website without all the scripted monitoring would be infinitesimal in size.

Does this make sense, dear a.username?, character and profile of the big data drama? Is a.username? the profile of disruption without qualities? To paraphrase the Amazon reader Angus M. Kennedy's review of Musil's *The Man Without Qualities*, *The Hidden Life of an Amazon User* is a "stupendous creation of insights and introspection."

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Prototyping Digital Sovereignty

Experimenting with Community Wireless Networking Technology

Hagit Keysar, Elizabeth Calderón Lüning and Andreas Unteidig

Introduction

The term "digital sovereignty" has percolated in the last decade in academic and policy debates as a prescriptive normative term to describe various forms of autonomy, self-determination and independence in relation to digital infrastructures, technologies and data.[1] While territorial perspectives on the term are prevalent,[2] understandings of digital sovereignty as digital *self-determination and autonomy through collective control* are increasingly articulated by civil society entities and social movements.[3] Closely connected to social justice narratives, such concepts of digital sovereignty often stipulate social

1 See the Chapter "Digital Sovereignty" by Pohle and Thiel in this volume.

2 Through the established nation-state perspective, digital sovereignty conveys state protection of citizens' privacy rights versus other states (Couture 2019; Floridi 2020; Pohle 2020; Thiel 2019), as well as defending democratic procedures against external manipulations through curtailing or countering disinformation campaigns (Thiel 2019). A second strand focuses on the recalibration of power between the public and private sectors by restraining corporate control over the development, deployment and management of digital infrastructures, data and analysis (Floridi 2020; Pohle and Thiel 2021; Thiel 2019).

3 It is set closer to ideas such as "food sovereignty" coined by Via Campesina at the World Food Summit in 1996 (Anderson 2018).

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control over technologies and digital infrastructures, spotlight the development and use of digital tools that are conceived within community ecosystems and aim at raising community awareness, fostering digital participation and the appropriation of technology (Couture 2019; Haché 2014). In the following, we explore whether and how DIY and open-source technologies in participatory design practices can produce the social and political spaces for advancing a community-driven imagination of digital sovereignty.

This chapter offers a case-study analysis of a collaborative prototyping process in the framework of the MAZI project – a three-year EU-funded research aimed at creating techno-social infrastructures for digital sovereignty, with case studies in three major cities – Berlin, Zurich, London – and in several towns in rural Greece.[4] This paper focuses on MAZI's Berlin chapter. The overarching objective of MAZI (meaning *together* in Greek) was to develop interventionist methodologies that address the increasing corporate centralization of digital infrastructures and the uniform modes of digital interactions that emerge as a result of the steady closure of digital ecosystems. The idea of digital sovereignty within MAZI focused explicitly on open-source community wireless technology (CWN) that is developed and used within hyper-local settings, at the scale of neighborhoods. It aimed at creating interdisciplinary spaces for questioning the underlying social and political assumptions and biases that structure network technology itself; through that, it collectively explored what the notion of community-led "digital sovereignty" might actually mean in practice. In Berlin, the experimental orientation of the MAZI project meant that technical and design decisions in developing the hardware and software for CWN were kept open, allowing for a meaningful collaborative process. A participatory prototyping process was planned for translating "big" questions on the meaning of digital sovereignty into hands-on engagement and encounters.

This orientation draws on a growing body of literature in sociology, anthropology, design research and science and technology studies (STS) that expands the notion of prototyping beyond simply a technical process for the development and design of technological

4 MAZI was conducted between the years 2016–2018 and received funding from the European Union's Horizon 2020 ICT CAPS initiative under grant agreement no 687983.

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objects[5] (Guggenheim 2014; Jimenez 2014; Kelty 2010; Lezaun and Calvillo 2014; Marcus 2014; Suchman 2000). Research in these fields delves into the social and political role of prototyping, or technology-in-the-making, for developing material forms of participation and democratic practices.

The social and political potentials of prototyping have been advanced particularly since the 2000s, when the development of interactive products, such as mobile devices, laptops and interactive games, created a need for rapid processes of interdisciplinary design and engineering. Prototypes play a central role in those processes (Bogers and Horst 2012; Kurvinen, Koskinen, and Battarbee 2008). As Suchman et al. (2002) show, interdisciplinary reconstructions of prototypes allow for the development of innovative processes that transform the focus on invention as a singular event to its reconstruction as diverse collaborations across different social environments.

Such analyses pointed out a shift of attention from prototyping artifacts to prototyping processes through "ongoing practices of assembly, demonstration and performance" that reconstruct human actions and reconfigures social and material relations (Suchman, Trigg, and Blomberg 2002, 163–66). This has gained particular momentum in the past decade with the proliferation of information technologies and digital networks. In particular, open-source technologies as well as the re-emergence of DIY and hacking practices seem to radicalize the proclaimed democratization of technology. As many have shown, open, collaborative and generative processes of prototyping can serve as sites of knowledge co-production and knowledge commons (Benkler 2006; Kelty 2008; Powell 2012). But at the same time, they may obscure conflicts and perpetuate socio-economic power structures (Tkacz 2014; Lanier 2006; Turner 2010).

In this case study analysis, we flesh out some of these conflicting consequences of openness by focusing on the inadvertent results of open processes and emphasizing the need to connect between openness and accountability to the shortcomings and inherent failures in the context of experimental realms. Our analysis is threefold, we critically examine and reflect on 1) the potential contradictions between experimental realms and normative expectations,

5 A prototype is an initial model of a product, object or design that is still in stages of development, open for rethinking and iteration (Hackney and Manar 2015).

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2) potential collision between different epistemic systems that may exclude or alienate participants, and 3) the question of sustainability within project-based interventions. We argue that, for advancing community-driven futures of digital sovereignty, it is crucial to treat such troubles and conflicts not as obstacles we should simply get rid of or solve. Rather, they must be seen as the living materials of technological development that engages with ideas of democracy – indispensable for politically conscious design concepts and tools.

MAZI: Community wireless technology in Berlin's urban space

Information and communication technology (ICT) has become strongly commercialized and centralized by a few, quasi-monopolized technology corporations (Floridi 2020; Pohle 2020; Pohle and Thiel 2021, upcoming). While individuals and collectives are benefitting from the expansion of globalized ICT, they are often stripped of rights and political agency in regard to ownership and control over data. The power of technology corporations lies not only in controlling the back-end design of data infrastructures but rather in the highly specialized capacities to aggregate massive amounts of data and to analyze them in order to produce new kinds of knowledge (Boyd and Crawford 2012; Mayer-Schönberger and Cukier 2013).

CWN technology evolved alongside wireless networks and it demonstrates a rich history of applications on various scales. Examples range from the Dead Drops by Aram Bartholl who simply plastered USB sticks into cracks in public spaces, creating very local networks;[6] the Pirate Box, which allowed NYU students within the lecture hall to share files without breaching copyrights policies;[7] to collectively owned and managed wireless infrastructures, such as, Freifunk in Berlin[8] or the Metropolitan Wireless Network in Athens – one of the largest networks in Europe with 30,000 private antennas connected.[9] It has become relatively easy to develop a personal network, since the necessary hardware is affordable and the software

6 https://arambartholl.com/dead-drops/.

7 https://piratebox.cc/start.

8 https://freifunk.net/en/.

9 http://www.awmn.net/content.php?s=9fc8551534eefe7780d6e9f10b557103.

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has been made available through massive documentation of open-source communities of practitioners. Still, there are many socio-economical and material barriers to those who are not technologically savvy, or don't have the time and resources that technological participation require (Rumbul 2015; Haklay 2013).

MAZI Berlin constitutes one example of a range of projects that seek to advance democratic and bottom-up approaches to prototyping technology.[10] In the coming together of design and open-source culture, collaborative forms of prototyping turn both the prototype and the design process into a continuous state of "perpetual beta" (Unteidig, Calderón Lüning, and Dominguez-Cobreros 2017). This is where experimental or unstable versions of the design are released for use and at the same time continue to be in processes of development and documentation that are maintained by the community of users. This circular movement of open-source techno-social development has been analyzed by Christopher Kelty (2008, 4) as the "unprecedented forms of publicity and political action" of free software and other similar and related projects that emerge from it. Kelty's articulation of the politics of open source cultures is particularly relevant for imagining community-driven digital sovereignty. It brings forth the idea of Free Software as a "public" that is concerned with its legitimacy and independence from state-based forms of power and control, as much as corporate, commercial and non-governmental power (Kelty 2008, 9). Recursive publics, he explains, focus on the radical technological modifiability of their own terms of existence.

The MAZI Berlin project was premised on the imagination of open-source, recursive publics, but it had to grow a community that would put this imaginary into practice. As such, it first had to address the aforementioned problem of alienation and access by designing a toolkit that provides low-barrier accessibility to both the technology as well as to the terminology and discourse around it. The initial prototype of the "toolkit" has been deliberately designed using open-source and off-the-shelf components including Raspberry Pi[11]

10 To name a few: Subnodes by Sarah Grant (http://subnodes.org/); Open-source urbanism (Jimenez 2014); The Civic View from Above (Keysar 2018); Decidim in Barcelon (Aragón et al. 2017); Public Laboratory for Open Technology and Science.

11 Open source, modular, single board computer that was adopted widely for community use and education: https://www.raspberrypi.org/.

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and SD cards (see Fig. 1). The software was developed in part by the project partners while integrating existing Free/Libre/Open Source Software (FLOSS)[12] to create a "plug and play" installation allowing for an easy-to-use local digital network with some pre-set applications (frontend depicted in Fig. 2).

These technical elements were accompanied by documentation of use cases and experiences as well as other physical materials such as posters, guidelines and storytelling pamphlets. All these elements, in sum, contributed to the "MAZI toolkit" (see Fig. 3).

The process of conceptualizing, designing and developing these elements took shape in various academy-community partnerships, and also emerged from dialogues between the pilot groups in Zurich, London, in several towns in rural Greece, and Berlin. The MAZI Berlin pilot was led by the Design Research Lab at Berlin University of the Arts (UDK) with the participation of local urban-activist initiatives, and was facilitated by the NGO Common Grounds and its educational

Fig. 1 The technical artifact is made up of a RaspberryPi, an SD card and battery. Different casings and ways of attaching it to places have been experimented with throughout the various use cases. The solutions depicted here highlight the versatility and portability of the toolkit. Design Research Lab.

12 https://github.com/mazi-project/guides/wiki.

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platform "Nachbarschaftsakademie" (Neighbourhood Academy).[13] The main objective of the Berlin pilot was to advance discourses and practices around the idea of digital sovereignty with a strong focus on the urban: to address the individual and collective freedom and right to actively partake in the shaping of digital realities; to interpret, define and become involved in the construction of discourses and imaginations about community-driven, digitally mediated futures and, particularly, to look beyond commodified narratives of the smart city.

The main element of the MAZI project, the toolkit, brought together different groups who were interested in the possibilities of CWN tech; however, it was the main locale chosen for MAZI Berlin, Prinzessinnengarten, that played a significant role in bringing together a diverse group of people. Prinzessinnengarten is an urban community garden in Kreuzberg that envisions and develops a collaborative and protected space for learning ecology, conviviality and self-organization. It is also the Neighbourhood Academy's space of

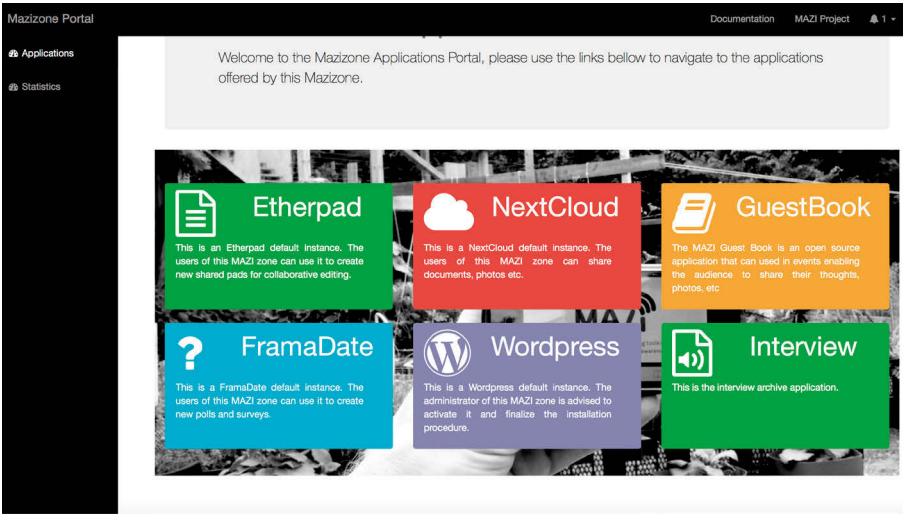

Fig. 2 The default front-end encountered by users of the toolkit after installation. MAZI project.

13 The Neighbourhood Academy, existing since 2015, is a self-organized open platform for urban and rural knowledge sharing, cultural practice and activism.

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activity, a learning and knowledge exchange platform.[14] The participants in the project included activists, artists, researchers, designers, engineers, social workers and local community members, all involved in one way or another with the Neighbourhood Academy[15] and actively engaged in issues related to urban ecology and "the right to the city" in Berlin.[16]

With this social and spatial infrastructure as a starting point, the prototyping process was designed and implemented in three phases: first, community outreach and finding common ground for collaboration;[17] second, igniting the collaborative development of the CWN technology and adapting it to local context;[18] third, deploying the technology with partners in different settings.[19]

Phase 1 – Creating common grounds for collaborative technological development

The first phase of the MAZI Berlin pilot project aimed at situating and connecting the topic of CWN within the discursive realm of the participants. Two workshops were planned and held introducing the MAZI project and DIY networking technology. The first workshop centered around the idea of "collective learning," a concept introduced by the Neighbourhood Academy to understand urban activism as a form of emancipatory learning. It sought to identify shared interests and to discuss the relations between technological engagement and activism in the city, grow trust, social ties and to share different perspectives on what DIY networking is all about. The shared interest in urban ecology and the broader urban issues that mobilized the different groups that participated created a basic level of trust and a backbone for collaborative and experimental work. Urban topics such as

14 https://prinzessinnengarten.net/de/home/.

15 For a list of the initiatives that participated see footnote 21–23.

16 The term "right-to-the-city" coined by the sociologist and urbanist Henri Lefebvre (1968) in the aftermath of the Parisian occupation, was argued as the "right-of-non-exclusion" from the qualities and services of the urbanized society and as a call to reclaim the city as a co-created space (Holm 2011; Lefebvre 1996).

17 An exact division of phases in time periods is artificial since the phases partly overlap and are to certain extent on-going. Nevertheless, a rough division can be made. The first phase was mainly based in the first six months of 2016.

18 From July to August 2016 with continuous reiterations and improvements.

19 Throughout the project starting in January 2017.

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Fig. 3 The toolkit also comprised information materials such as posters, handbooks and storytelling pamphlets. MAZI Berlin.

Fig. 4 The first community workshop introduced the idea of MAZI to a range of different stakeholders. MAZI Berlin.

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land grabbing, financialization and new contested urban governance models for city planning echoed with discussions and issues within critical technology discourses that stand against the anti-democratic dynamics of privatization and centralization. The second workshop shifted to discussions on the technological aspects of the project by collectively brainstorming ideas about DIY networks and their potentials for digital self-determination.

Phase 2 – Collaborative development of technology

As part of the second workshop, initial technological ideas were formulated around the needs, wishes and desires related to matters of concern brought to the table by participants. With the help of quick and loosely structured prototypes (storyboarding, paper prototypes, click dummies, etc.), participants developed potential use cases for MAZI Zones in different settings. In this context the idea of "MAZI Zones" was formulated; it articulated a plan for multiple adaptations of the toolkit in Berlin to be contextualized, deployed and governed by the various initiatives, with technical and design assistance by the MAZI Berlin project team. Subsequently, the physical presence of the Neighbourhood Academy at Prinzessinnengarten was envisioned as the central hub and platform, on which experiences and learnings from the different MAZI Zones in the wider urban landscape of Berlin were to be collected and synthesized. To this end, the "MAZI Archive" software was developed by the Berlin lead pilot-team with the goal to locally collect and disseminate user-generated content within the MAZI Zone. Therefore, the particular MAZI Zone at Prinzessinnengarten acted both as a local hub and as an access point for visitors and users to get to know the project in general. It brought together issues and experiences from other hubs, and also offered more general opportunities to learn about CWN technology, the people, and activities behind it.[20]

20 The software, "MAZI-Archive", was hosted on a hardware setup consisting of a Raspberry Pi 3 (with a 16GB SD-Card), TP-Link TL-MR3020 Wi-Fi Router and an Anker Battery Pack. The router supplies an open Wi-Fi with the SSID "MAZI Archive," which serves both for the data to be submitted by the recorder-application as well as an access point for users to interact with the content. After some testing in different settings, the MAZI-Archive application was integrated to the default version of the broader MAZI platform.

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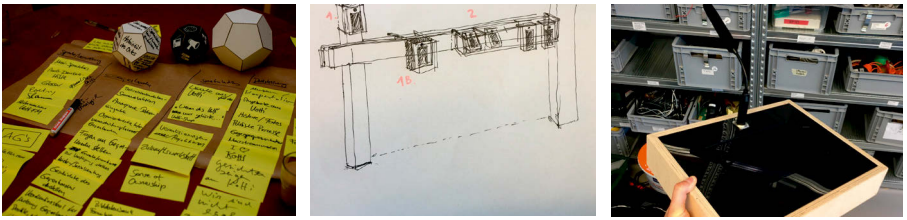

Fig. 5 A large number of prototypes, sketches and discussion prompts helped facilitate the participatory process throughout the project. MAZI Berlin.

Phase 3 – Deploying MAZI-Toolkit in multiple local setting
Aiming for openness and local versioning of the toolkit to make it versatile for a growing community of users, MAZI-Zones were put into use in different settings around Berlin. By the end of the project, the toolkit was deployed in thirteen different locales with the direct support of the lead pilot-team.[21] It was used as research tools for seminars by academics in university settings,[22] for communication and management in neighborhood issues by a few communities in Berlin,[23] for self-organizing in protest related events,[24] as an interface between researchers and visitors in the Berlin Natural History Museum (Rössig et al. 2018), and for exploring the interdependence of digital tools and social innovation by the German Federal Ministry of Environmental Protection.

The wide range of settings in which MAZI Zones were implemented required a continuous process of development and production of supplemental documentation and tutorials that would fit various contexts, stakeholders and objectives. Most deployments started with a specific workshop format developed within the MAZI project called "unboxing," where the toolkit was unpacked in order to let the

21 In addition to that, several independent deployments of MAZI Zones across Germany and abroad (e.g., in Togo and Israel) have been informed by the activities of the Berlin pilot process.

22 Alice-Salomon-Hochschule and Chair for Urban Design Technical University Berlin and University of Arts in Braunschweig.

23 The Neighbourhood Academy, ZK/U – Centre for Art and Urbanism, the Commons Evening School and the neighburhood centre Kiez Anker 36 in Berlin Kreuzberg.

24 Bizim Kiez, Park Academy, Stadt von Unten, and the Anti-Google-Campus Initiative all active in the neighborhood of Kreuzberg-Friedrichshain in Berlin.

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participants get to know its components. Participants were introduced to the MAZI project, followed by a demonstration of a pre-installed MAZI Zone and a guided process in which each person assembled and configurated their own personal MAZI Zone. Through hands-on engagements participants could see, touch and interact with the different components of DIY wireless network technology and develop a deeper understanding of both the components of the technology and the project's critical and experimental approach.

Fig. 6 Installation of a permanent MAZI Zone in the Prinzessinnengarten (left). Visitors interacting with the MAZI archive sound installation (right). MAZI Berlin.

Fig. 7 MAZI Zones have been used in other context, e.g., for installations at the Berlin Museum für Naturkunde (right) or the Venice Architectural Biennale 2017 (left). Design Research Lab.

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Fig. 8 In "un-boxing" workshops, participants were guided through the process of assembling and installing their own MAZI Zones. MAZI Berlin.

Discussion: Fleshing out the troubles of openness

The core motivation for the MAZI project, as mentioned earlier, centers around the development of digital self-determination and autonomy through collective control over technologies and data in the city. While the "right-to-the-city" discourse raises demands for democratic participation in the production of urban space, the topics under discussion in MAZI evolved around similar logic regarding the data-driven mediations of urban space and life. It sought to address the need for concrete and viable alternative technological solutions that would allow for a different distribution of power between users, developers, administrators and owners of ICTs (Antoniadis and Apostol 2014).

With this in mind, the experimental aspects of collaboratively prototyping the CWN technology engaged participants in developing tools and practices that would extend their practices of urban activism within the realms of technology. Developing and using the MAZI toolkit facilitated a collaboration in which the emphasis was on the productive and not less on the processual aspects of experimentation. As Alberto Corsín Jiménez (2014) remarks, prototyping incorporates failure as a legitimate result in the realization of the process and stands for reconfiguring, at once, material objects and social relations. It is a process of trial and error, he writes, and embracing failure can allow for the emergence of inventive practices, and for new experiences and processes of democratization.

While we share these considerations, our case study analysis is set to flesh out the dilemmas and problems that might emerge within such open source urban experiments. What may be the

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inadvertent consequences of challenging the rigid boundaries of expertise through open-source tools? What happens when experimental, techno-social visions are met with "old" politics, and entrenched social, political, economic perceptions, divides and inequalities? Who is accountable for the upshots of failure beyond the experimental and visionary realms of prototyping; how is failure mitigated within the realities of social context and locally situated interventions? With these questions in mind, we now focus on the tensions and troubles that came up in the MAZI Berlin project[25] and unpack some of the challenges into three categories of critique and action.

Reworking structural power relations in academy-community partnership

Comparing and synthesizing the dynamics of discourses and struggles for urban infrastructure and technological infrastructure created a space in which a diverse range of stakeholders could collaborate and engage in processes of mutual knowledge production, but it was only a first step. Academy-community partnerships bring with them some tensions; inevitably, there are potential contradictions between the realms of the research project and the expectations, responses and concrete needs brought by participants. During the MAZI Berlin project there were demands placed on the various urban initiatives that took part, to invest their time, skills and knowledges in the project. This required clarity with regard to the concrete benefits participants would gain from taking part in the project.

Over the years, the Neighborhood Academy played the role of a gatekeeper and facilitator for building productive collaborations and relationships with urban initiatives within various settings. In participatory research and design projects, the community gatekeepers play an important role, as they hold the power to allow or deny access to particular communities or institutions (Lenette et al. 2019). In the MAZI project, these roles were part of the negotiation between the UdK and the Neighborhood Academy from the very early stages.

A level of reservation toward this collaboration was evident when e.g., participants addressed the phenomenon of "academic harvesting", i.e., the one-sided withdrawal of knowledge by researchers. For

25 Related efforts have been undertaken by comparing and contrasting the Berlin and London pilots (Gaved et al. 2019).

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example, one of the activists in the Neighborhood Academy mentioned the considerable and burdensome workload he experienced over the years, due to the fact that the community garden has become a popular subject of countless bachelor's, master's and doctoral theses. While the activists welcomed such collaborations (and the visibility they generate), they often experienced a lack of concrete and immediate exchange value and, in many cases, research findings and outcomes where not shared back.

Hence, a considerable level of trust had to be established within the lead pilot team before it could even advance to engaging activists from different urban initiatives. This also required a careful consideration of under-valued and "invisible" forms of labor (D'Ignazio and Klein 2016) that go into creating lasting relationships and trust throughout the communities. This initial robustness in reflecting roles and expectations, helped set a standard of reciprocity for the rest of the project. It enabled to critically rework power relations and specifically address the need for a two-way relationship to make sure that the outcomes of joint efforts are also equally distributed (ibid.).

One of the strategies developed in order to establish trust and fairness within the process was to financially compensate the initiatives participating in MAZI Berlin for sharing their expertise and insights in workshops and other events. This was accompanied with a transparent discussion on the financial structure and available funds in the framework of the project. Furthermore, the reciprocal sharing of skills and knowledges during workshops related to CWN technology constituted another aspect for creating mutually beneficial relationships of collaboration and exchange. The workshops provided the base for collectively prototyping the MAZI toolkit, but, moreover, they created a shared space for different initiatives to address and share resources, challenges and needs. Finally, the actual deployments of MAZI Zones (project's third phase) allowed the establishment of shared ownership and use of hardware and software, while providing technological support for the initiatives in their independent projects.

Between experimental realms and epistemic norms

While all these arrangements and agreements sound like solutions, tensions that stood in the way were entangled in more complex sets of epistemic norms and expectations that many times pose significant challenges in collaborative, civic and open source projects

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(Rey-Mazón et al. 2018). DIY engagements in CWN is a relatively new idea for introducing the political potentials of decentralized/local ownership and management of technology and data (Antoniadis 2016). For CWN to become a tool for community-driven digital sovereignty, a prerequisite is a community-based awareness and capacity to exercise control over the development and implementation of digital technologies. Critical awareness to the patterns of corporate sovereignty over technologies and data was discussed and built among participants; however, the success of the project depended on overcoming the basic alienation most people feel toward experimental, "half baked" technology, which requires significant investment before it fully performs its tasks. The main impediment was in challenging the boundaries of expertise. The pilot team had to continuously address and deconstruct roles ascribed to them, e.g., being perceived as "experts" or "service providers" that deliver solutions in the form of reliable technologies to passive customer-users.

The tensions between users and experts were dealt with by purposefully keeping open several design decisions regarding the MAZI toolkit, which in turn allowed for a meaningful, long-term and open-ended participation and appropriation of tools and methods by the various actors who participated in the project. These questions were negotiated in situ through ongoing practices of design-in-use (Gregory 2003; Suchman, Trigg, and Blomberg 2002).[26] Such questions included: In which contexts and for which purposes can it be used? Who uses it? How is it managed? It meant that the process would be "messy" by relying on the active collaboration of participants that might feel alienated in the process. But it also meant that participants and facilitators would directly engage with the underlying infrastructures of CWN tech and develop critical thinking on the structure of technology itself. Designing a self-built CWN tool meant that the invisible decisions, ideologies and conventions of a community of practice that are embedded in proprietary technology and generally in technological infrastructures (Star and Ruhleder 1996) could be unpacked and negotiated.

26 This shift in design practices that began in the later 1990s was significantly informed by Scandinavian approaches to participatory and "cooperative design" (Bødker and Grønbæk 1991; Gregory 2003; Hillgren, Seravalli, and Emilson 2011; Kurvinen, Koskinen, and Battarbee 2008; Suchman, Trigg, and Blomberg 2002).

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Relatedly, within processes of experimentation, the decision of whether the prototype should be high or low fidelity, paper sketch or material object, "messy" or "quick and dirty," does not merely relate to questions of flexibility, cost and time, but also shapes a politics to the process. It determines who can (or feels entitled to) participate in the process, what role can one play and how meaningful can one's contribution be. Therefore, taking "messiness" seriously means openly engaging with issues of ownership, authorship and control in the realms of technological development, and taking an active role in shaping its politics. Within such participatory processes, prototypes have been conceptualized as "boundary objects" (Bogers and Horst 2012; Powell 2012; Star 2010; Star and Griesemer 1989) that allow to rework the designer-user dichotomy and to mediate between different social and epistemic positions.

By embedding a critical political attitude within the process of prototyping, MAZI Berlin sought to embrace difference and conflict as resources for design while incorporating a discussion of political and ethical values as a goal in its own right (Gregory 2003). The disciplinary and epistemological backgrounds introduced by the heterogenous actors – activists, designers, researchers, neighbors – diverged widely and required mediation. While the design researchers had a strong interest in experimental work that tests different "half-baked" prototypes and cultivates openness, activists expected a certain degree of "doneness." Usually working under relatively precarious conditions toward goals that are difficult to achieve, urban political activists have little time to "stray" or "tinker" around for the purpose of mere exploration. In this regard, an exploratory, open design process with a high degree of ambiguity may very well result in antagonism and counter-productive results.

This tension between "openness" and "deliverables" came across in the inherent conflict between the realms of continuous and often strenuous processes of community activism and the structures and logics of project-based interventions. By "project logics," we refer to the often rigid structures, in which work is organized and managed in research and development projects, often adhering to (if not mirroring) the hierarchies and result-based expectations of academic institutions and funding organizations (Torka 2009). Academic and funding bodies demand the process to be structured by clear beginning and end dates, as well as agreed-upon deliverables and,

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usually, a certain degree of positivistic pressure (as in the need to deliver a solution to a previously described problem). These pressures had to be continuously re-negotiated with the "messy" realities and the continuous nature of community concerns within the prototyping process. Consequently, the project partners had to identify and negotiate ways to deliver an outcome that would adhere to institutional requirements, and at the same time ensure that the MAZI Berlin project will have a lasting and meaningful effect.

Infrastructuring against the troubles of project logics

The idea of "design as infrastructuring" (Binder et al. 2011; Björgvinsson, Ehn, and Hillgren 2010; Ehn 2008; Ehn and Badham 2002) allows one to withdraw from design as a nexus of problem solving. In this case study, it allowed the team to understand the project as oriented toward long-term, complex and interdependent processes of social transformation by creating environments and tools that can be built upon one another.

To follow the aspirations of open-source culture, MAZI had to grow a community that would continue to use and maintain tools and techniques for CWN technology activity beyond the official end of the funded project. The problem of maintenance and sustainability of MAZI Berlin was addressed halfway through by the lead pilot team, who decided to shift away from a focus on project "outcomes" to thinking and developing infrastructures for "everyday design activities in actual use" (Björgvinsson et al. 2010, 43). Correlating with the idea of the recursive public in open-source culture (Kelty 2008), such an approach is oriented toward designing infrastructure that would provide support for a self-organized community around CWN technology and, more importantly, provoke its creation.

Infrastructuring in that regard included design choices on the hardware and software level that were oriented toward adaptability and ease of use; also, documentation and knowledge repositories extended well beyond technical issues in order to include storytelling of exemplary use cases of MAZI Zones and lessons learned. Furthermore, a strong emphasis was given on technical training and the careful establishment of a "community-of-practice" (Wenger 1998) that would make it possible and probable that future projects will continue growing from the infrastructures established by MAZI Berlin.

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Nonetheless, on a more technical but fundamental level, long-lasting usability and necessary maintenance of DIY technologies remains a problem within the context of academic research projects. While the MAZI Berlin lead pilot team focused on certain aspects of the design and its long-lasting effect, the project's structure and logic couldn't possibly provide for upward compatibility. Continuously updating the toolkit to adapt with external hardware upgrades is an uphill battle. As a result, the software providing the base for the MAZI toolkit is not supported by current versions of the Raspberry Pi, and it is becoming increasingly difficult to acquire older versions of the microcontroller in order to use the toolkit. With no remaining funding, and the academic and technical team moving on to other endeavors, sustainability and maintenance proves very difficult. Any upgrade would merely be a temporary step towards the same problem repeating itself with the next major version update of the technology in use.

In retrospect, some of the efforts toward sustainability and longevity of the project activities indeed proved fruitful: A few of the workshop participants[27] found their own ways of acquiring funding and continuing the use and development of MAZI. On top of that, new projects in entirely different contexts have been initiated building on the toolkit and its accompanying repositories.[28] However, complexities remain and are inherent to the overarching project of community-driven digital sovereignty and the broader idea of prototyping technologies in academia-community partnerships.

27 The neighbourhood center "Kiez Anker 36" has thus far had three follow up projects: "StadtTeilen" (https://stadtteilen.org/forschung/) funded by the Robert Bosch Foundation, "PRoSHARE" (https://jpi-urbaneurope.eu/project/proshare/) under the European funding program Urban Migration, and "Kiezgeschichten" (https://stadtprojekte.org/2020/12/kreuzberger-kiezgeschichten/) financed by the German Federal Ministry of Education and research.

28 For example: Miadé (https://www.dfki.de/en/web/news/detail/News/lokale-community-netzwerke-fr-togo0/) – Local Community Networks for Togo by the German Research Center for Artificial Intelligence.

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Conclusion

The MAZI project aimed at building alternative technologies co-designed in local context while experimenting with open models of ownership, governance and administration. Beyond the technical aspect, the project continuously intertwined technical activities with critical discourse on urban and technological futures. Furthermore, the MAZI project explored and documented a wide range of approaches in which technology can be conceptualized and developed through collaborative prototyping in hyper-local settings and with non-technological communities.[29]

In the MAZI Berlin case study, the curated, but nonetheless experimental phases with the self-built toolkit led participants to develop a sense of authorship and ownership in regard to network technology; it also helped reducing anxieties and reservations towards what seems to be "geeky" technology and allowed contributors to demystify the "black box" of CWN tech. However, the same successes were also grounds for some of the conflicts and tensions we have discussed. In that regard, roles, mandates and power structures had to be addressed and collectively approached as contingent objects that can be navigated, altered and adapted (Freeman 1970). This understanding is crucial in order to avoid reproducing forms of domination and to establish more horizontal systems of knowledge co-production that are based on justice and care.

The need to prototype tools for a technological and civic infrastructure correlates with current concerns with regard to the creation and management of "critical infrastructures" in the city, which are mostly expressed in relation to the risks of climate change (Klinenberg 2016). As Klinenberg and others suggest, critical infrastructures for safeguarding cities are not only about mitigating disaster damage but also about growing awareness to collective vulnerability and addressing dominant political and social institutions (Howe and Boyer 2016; Klinenberg 2016). By bringing together the discourses and practices that revolve around urban and technological rights-to-the-city, the MAZI Berlin case study experimented with the possibility of drawing invisible lines between different articulations of critical infrastructures, whether in urban, environmental, technological or

29 For an overview on the different pilot study activities see https://mazizone.net/mazi-eu/pilot-studies/.

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epistemological realms. These transfigurations of urban infrastructures raise questions regarding the possible emergence of a political discourse that brings together ideas and techniques which are usually thought of and practiced in isolation from one another.

While MAZI Berlin successfully brought together discourses and practices that revolved around the articulation of urban and technological rights to the city, it nonetheless demonstrated the risks of embracing openness as a taken for granted democratic alternative. For openness to become a politically conscious alternative it must be inextricably intertwined with accountability to the potential consequences of locally situated interventions. Experimental processes might be indispensable for prototyping civically and community-oriented technologies, yet, openness and collaborative experimentation do not guarantee the advancement of digital participation, self-determination and autonomy. Our analysis of MAZI Berlin suggests that reworking the complex obstacles that stand in the way of establishing recursive dynamics of development, use and governance might open up opportunities for both political action and public discourse that problematizes and challenges the tightening, corporate control over digital realms.

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In the loneliness of our soliloquies, in our monologues, we become conscious of our own consciousness.

— Heinz von Foerster, 1989

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Viruses as Phenomena of De Facto Destabilization and Potential Subversion

Siegfried Zielinski

Preface

The most important precondition for a rhetoric to succeed is that one should speak on only those topics in which one is competent. And one should do this in such a way that what comes across is one's own conviction in what one is saying. I learned these two basic principles over a breakfast conversation with Walter Jens, the first professor of rhetoric at a German university, in 1990 when he was still president of the Academy of Arts in Berlin. He offered them as well-meaning advice, after noticing how nervous and uncertain I was as a young intellectual in advance of a panel discussion I was to lead later that evening, with Bazon Brock, Vilém Flusser, and Robert Jungk (back then, the Technical University of Berlin still had a designated faculty position for a professor of Futurology, which Jungk filled with a radically critical and ecological spirit). The advice left a deep impression on me. For it is precisely these two weak spots in the system – in this case, the publishing system – that the pandemic of 2020/21 has laid mercilessly bare as it goes on. The published discourse of the past weeks and months has proliferated to the point of insufferability, with the facile and self-satisfied speech of self-appointed experts on complicated matters of medicine and biology, on complex system-connections in virology and epidemiology, on overheated economies, incomprehensible global relationships, and

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their eruptive shifts and changes. For this reason, I'd like to emphasize at the start: I am a media thinker and am speaking in this lecture[1] *as a subject who tries to reflect critically and creatively on techno-based media and communications relationships. And so, if you'll allow me to begin with a marginal, medial and maybe even surprising point of entry.*

I am presently working with musician, composer and sound researcher FM Einheit, original percussionist and beating heart of the industrial avant-garde band Einstürzende Neubauten, on an internet platform that began as an artists' initiative in Saint Petersburg, Russia. Saint Petersburg, formerly Leningrad, is that peculiar city where the first ever patent was issued for electronic color television over one hundred years ago and where, a few years after that, the tele-electronically controlled musical instrument, the theremin, was invented. The first broadcast by Radio DON – or Radio Free Modulations, as I call the project – was devoted to the medium itself and its potentialities; it aired on May 1, 2020. The second broadcast, which went online a week later, is focused entirely on the virus as phenomenon. The hour-long program concluded with a song, for which I wrote the following lyrics and FM Einheit the accompanying music and noise:[2]

After the Pandemic…

After the pandemic
We need stronger cars
To be able to escape faster
We need safer cars
To protect us from the other
We need mobile fortresses
Strongholds on wheels
Fast tanks would be ideal
We need more, more and more

1 The text was presented in a somewhat shorter version on April 30, 2020 in the online colloquium *Designforschung*, with Gesche Joost of the Design Research Lab at the Berlin University of the Arts.

2 All the broadcasts are accessible on conductor Teodor Currentzis's platform MusicAeterna, the above-mentioned second broadcast at the following address: https://musicaeterna.world/en/?id=369.

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After the pandemic
We need higher fences
To protect our properties
Alphaville on all continents
We need to accelerate our communications
In order to increase the online delirium
We need more virtual commodities
We need more virtual sex
And we need more, more and more

After the pandemic
We need bigger football stadiums
We need bigger concert halls
We need bigger and faster aeroplanes
We need bigger and faster ocean liners
We need flying and floating castles
We need to heat up the planet until it is glowing
All we need is more, more and more
From everything, for everybody

After the pandemic
After we had slept so much and so long
We could also wake up
Interfere into the saturated system of correlated realities
Recognize the other as our possible neighbor
Meet the others with dignity
Take care for an unconditioned dialogue and
Dance the unconditioned WE
We need more, more and more (of this)

The text of my brief lecture consists of seven fragmentary reflections and thought provocations. And so that you don't sink into bitter melancholy once I finish, I will present you at the end with some constructive consequences in connection with these seven fragments, some projections I have derived from my reflections – primarily concerned with teaching and research in the fields of art and design, of creative making and thinking, which to my mind must comprise an indissoluble pair if they are to be realized with any level of sophistication.

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Reflections and thought provocations – Seven fragments

1.

Viruses are the spawn of an atmosphere too dense and overheated. Viruses can never be autonomous, let alone *free*. Viruses lead wholly dependent existences; they exist only in relation to other living individuals. They need bodies or biological systems that are, in principle and in their healthy form, larger, more powerful and richer than they are themselves. These bodies/systems function for the virus like hosts. If it is even possible to speak of freedom in this context, that freedom would belong to the host, not the guest. The hosts have, in theory, the choice whether or not to allow the infectious guest inside. The viruses have no choice.

William S. Burroughs – who regrettably never won the Nobel Prize for literature, although he was at least as deserving as Bob Dylan – composed his magnificent and completely delirious protocol of an intellectual junkie, *Naked Lunch* (1959), like a report on a planet-enveloping virus. About its basic parasitic function, he wrote: "It is thought that the virus is a degeneration from more complex life-form. It may at one time have been capable of independent life. … It can exhibit living qualities only in a host, by using the life of another – the renunciation of life itself, a *falling* towards inorganic, inflexible machine, towards dead matter" (Burroughs 2001, 113).

2.

The virus drives toward destruction. That is its determinacy. It lives unto death, one might say, in a play on a phrase from the Danish philosopher Søren Kierkegaard: It lives for the sake of organizing the death of its host, which necessarily implicates it in its own death (the death of the virus itself). The virus strives to prolong this process as long as possible in order to safeguard its spread. Viruses need hosts, but hosts have zero need for viruses. This sort of parasite is always potentially lethal for them. Especially when the living systems in question freely idle in *circular full closure* in anticipation of their expected death.

The opposition of organic and mechanical that Burroughs opens up is constitutive for the novel *Naked Lunch*, as it is for other early texts by this eminent member of the Beat Generation. What's remarkable here is the word choice, which we will encounter again and again

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with Gilles Deleuze and Félix Guattari in their critique of the technical: the *in*- or *an*organic, which they borrowed from Antonin Artaud's anorganic body, the "body without organs" (*corpus sans organes*[3]), and the *machinic*, which determines their idea of the Other that confronts the human.

Burroughs expresses, trenchantly and rather splendidly, the internal correlation between a death-oriented *Dasein* and the extremely organized and disciplined parts of the social by analogizing addiction with the all-pervading destructive activity of cancer, which he then in turn compares with bureaucracy: "The end result of complete cellular representation [of a body – S.Z.] is cancer. Democracy is cancerous, and bureaus are its cancer. ... Bureaus cannot live without a host, being true parasitic organisms. ... Bureaucracy is wrong as a cancer, a turning away from the human evolutionary direction ... Bureaus die when the structure of the state collapses. They are as helpless and unfit for independent existence as a displaced tapeworm, or a virus that has killed the host" (Burroughs 2001, 112–3).

(I have always therefore, among other reasons, urged the scaling of arts universities such that they make do with a minimum of administration. Getting the best students, the best professors one can find from all over the world to perform a particular task and allowing them to work in a round-the-clock operation results in a minimum of bureaucracy. They will form a self-organizing system, in the best case much like a temporary cooperative.)

3.

The most important effect that viruses organize prior to death is, according to French media philosopher Jean Baudrillard, *destabilization*. This is why – once they've overcome their initial lethargy – the bureaus get called so forcefully to action, to put preventative measures in place. For in the various preliminary stages of the virus's destructive activity prior to death *subversion* and *insurrection* (uprising, revolt) are taking place. Both are bound up with one another: The increasingly extremely densely woven systems and networks of whirring, circulating energies, accelerations, en masse virtual encounters and productivity mania that we have ourselves created drive incessantly toward

3 Artaud first used the term in 1947 in his radio drama *Pour en finir avec le jugement de dieu.*

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their own – at least provisional – *destabilization*. That is the condition for their survival. And when survival is assured, then the systems may oscillate back into a normal state.

"Communication itself is a viral process," writes Baudrillard, "in the sense that every element in the communication is equalized and a simple network emerges where the same communicates interactively with the same. For me this means that wherever politics itself is immersed in the world of communication, it will arrive at the same fate of destabilization, it will become destabilized … Viruses, virality, etc., would be the revenge, the objectual revenge on all humans, against the entire human undertaking of ruling and *overruling the world*" (Baudrillard 1988, 249).

4.

The enormous destructive potential of viral phenomena can be transformed into constructive energies if they are understood in time as necessary interventions in saturated systems. (Provided one still believes the future is possible.) An important *modus operandi* for such a transformation, in both artistic and scientific processes, is the experiment. The experiment necessarily precedes the test. Ideally, the experiment is realized as a *generator of surprise*, a term coined by biologist Mahlon Hoagland (1921–2009) to describe experimental processes. A generator of surprise will provoke a deviation, at least momentarily, in a system otherwise reliably established to move in a specific direction. This deviation is the condition for every sort of change. In pre-Socratic natural philosophy, the term *clinamen* was used to describe this. In his renowned poem *De rerum naturae*, Lucretius describes the sensational procedures as follows:

> When particles are borne by their own weight / on a downward path straight through empty space, / at undetermined times and random places, / they swerve a little—not much, just enough / so you can say they have changed direction. / Unless they had this habit of swerving, / all of them would fall through deep empty space / like drops of rain—among first elements / no impacts or collisions would be made, / so nature never would have made a thing. (Lucretius 2010, II, lines 302ff.)

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The phenomenon of unforeseeable deviation is comparable with the sudden change in rhythm, either walking or dancing, that the Marx Brothers cultivated on stage and Chaplin – or Fred Astaire, in a very disciplined way – honed to perfection on the screen. An analogue in contemporary music performance would be something like breakbeat, with its quick, unexpected breaks in only just established symmetries that provoke sudden changes in movement in the bodies on the dancefloor – a leap from an organic to a machinic, or at least machine-organized, state, for example.

One of the most convincing and at the same time difficult body-economies was composed around 1970 by painter and philosophical writer Pierre Klossowski under the title *La monnaie vivante (Living Currency)*. Michel Foucault described the text as "the greatest work of our epoch." It involves a way of thinking the body that is already conscious of its reification and commodification and attempts, from this point outward, to rethink the barter economy: the body as the site of production. Klossowski dedicates particular attention to the experiment that he himself radically practiced, both as writer and visual artist:

> As its basic underlying principle, industry presumes that every human phenomenon, like every natural phenomenon, can be treated as an *exploitable material*. … However, even the fabrication of useful goods has periods of intermittent sterility, especially since the accelerated pace of manufacturing must constantly find ways to prevent inefficiency in its production processes. And the only solution to the problem of inefficiency is waste. Trial and error, which is the condition of efficiency, necessarily leads to wasteful errors. (Klossowski 2017, 50, 49)

In his 1970 manifesto *The Electronic Revolution*, Burroughs explicitly takes Wilson Smith's scientific study *Mechanisms of Virus Infection* (1963) – which remains a worthwhile read, almost 60 years later – as his starting point, when he projects knowledge of virology onto the medial: "a virus IS a very small unit of word and image" (Burroughs 2005, 7). In a wealth of drastic examples, Burroughs shows how the concept of a viral word-image unit can be introduced into the assemblage of existing mass-medial communications as an irritating experience. He begins with the simple cut-up tape-recording experiments,

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which he developed with Brion Gysin as an aesthetic tactic of subversion, then moves on to the cut-up method with language and scrambling techniques, and finally proposes the organization of a sex-tape festival: "100,000 people bring their scrambled sex tapes, and video tapes as well, to scramble in together. Projected on vast screens, muttering out over the crowd, sometimes it slows down, so that you see a few seconds, then scrambled again, then slow down, scramble. Soon it will scramble them all naked. The cops and the National Guard are stripping down. LET'S GET OURSELVES SOME CIVVIES. Now a thing like that could be messy, but those who survive it recover from the madness" (Burroughs 2005, 23–24).

At the end of his manifesto, Burroughs describes the "categorical THE" of our established language as a "virus mechanism." The "EITHER/OR" that is practiced as a norm is another "virus formula" that always only allows for one alternative: "you OR the virus. EITHER/OR. This is in point of fact the conflict formula which is seen to be the archetypical virus mechanism" (Burroughs 2005, 35). Through critical reflection on an encrusted semantics, Burroughs ultimately develops the concept of a language yet to be created that will not only eradicate the virus mechanisms but make their formulations impossible in the new language: "This language will be a tonal language like Chinese, it will also have a hieroglyphic script as pictorial as possible without being cumbersome or difficult to write. This language will give one the option of silence" (ibid.).

5.

"Social distancing" is a stupid term deriving from the same deceptive semantic vicinity that gave us "social networks." What the concept aspires to, in the context of the pandemic, is in fact the opposite of what the term designates on a superficial level. "Social distancing" demands a maximal degree of social approach, in the sense of a solidarity that is so inflated as to be emptied of meaning, while at the same time a maximal suspension of physical contact.

Therein exactly resides the definition and function of the *telematic*. For at least two centuries already, we have been working "remotely," since the first technical artifacts and concrete systems were invented for the remote connection of those who could not be

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present together in the same place.[4] In our practice with these cultural techniques, we are well advanced. Hundreds of millions of people in the 20th century have been intensively trained in distancing from other bodies, from that which is non-identical with ourselves – whether through pandemics, world wars, economic crises, missions to outer space or above all the increasing commodification of communication. Tele-communication is the constant praxis in our interactions with representatives, with avatars, with dematerialized, de-eroticized, at bottom *statistical* bodies (units based in statistical information and calculations).

What we are now meant to learn is a bizarre balancing act. At the zenith of our alienation from the body of the Other, at which point even nature itself turns against the physical identity of the human being, we are meant to practice social nearness with one another from an appropriate distance – but nearness is no longer a sensory experience; it is instead the abnegation of physical contact. (And this is thinkable only in those few places on the planet where sufficient physical distance between people is possible. With money, one may buy distance. While poverty compels nearness.[5]) Thus, absolute proximity will henceforth be a component of an advanced culture of substitution and simulacrum. The so-called "social graph," which digitally and administratively governs the relationships in a system like Facebook, is meant to become generalized as life experience.

Interestingly, at the zenith of the disembodiment of reality, a counter tendency is asserting itself in the research on artificial extelligence. In robotics in particular, the concepts of an embodied intelligence (EI) are growing in significance.[6] Here, strictly rule-based systems work closely together with the irregularities and diverse productive potentials of matter.

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4 In the deep-time dimension, this genesis of telematic techniques can be thought of even more broadly – as far back as two millennia. Cf. e.g., my essay "War & Media" in Zielinski 2019.

5 *"poverty and proximity*
belong to the same
semantical neighborhood"
is the refrain of a song, I wrote for episode #14 of the MusicAeterna series; it has the thematical focus of *touch*. https://musicaeterna.org/en/media/fm_14_touch/.

6 Cf. for instance Ralf Der and Nihat Ay's projects at the Max Planck Institute for Mathematics in Leipzig, represented in summary form in Albus 2009.

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A hopefully temporary, but for the moment sensible *vade-mecum* in this situation could be the installation of a continuous and thoroughly livable split, comparable to the suggestion with which I concluded my book [*…After the Media*] just about ten years ago:

Fig. 1 On their shoulders the misers whose religion is Mammon carrying the universe. After the stock market crash of 1720 in France, England and the Netherlands, investors who had lost money called the stock dealers in illusions "wind traders." In this book "traders of wind" is also used to refer to *laterna magica* projectionists. In: *Het groote tafereel de dwaasheid. Vertoonende de opkomst, voortgang en ondergang der Actie, Bubbel en Windnegotie, in Vrankryk, Engeland, en de Nederlanden, gepleegt in den Jaare 1720*, Konst-Plaaten, comedien en Gedigten. Amsterdam: Zoote en Wyze, "Atlas Kegelspe."

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> To avoid an existence that is too caught up within time and is therefore paranoid, and to avoid being to little within time and therefore thinking one is at home on the rings of Saturn in melancholy and bitterness, it is helpful as a principle to cultivate the conscious split. We organize, learn, debate, and amuse ourselves in technological networks. We enthuse, think, enjoy, believe, and trust in autonomous, separate situations, each on his/her own and sometimes with other individuals. This amounts to a balancing act: in a single lifetime we have to learn to exist online and be *offline*. If we don't succeed in this, we shall become mere appendages of the world that we have created, merely its technical functions. We should not allow cybernetics, the science of optimal control and predictability of complex events, this triumph. (Zielinski 2013, 261)

6.

And here we are back where we started. According to Baudrillard, over-integrated systems necessarily bring about their own demise. Viruses are means of initiating such a process and, once initiated, accelerating it. This is the apocalyptical – thus at root theological – thinking. Exactly like the idea of a nature that now suddenly strikes back, only after the aging planet has finally clearly perceived what we have wrought upon it.

Nature has, since we have begun to think it, i.e., to live consciously within it, no autonomous and therefore no divine existence. It develops in reciprocal interaction with its inhabitants, its temporary guests – as do the inhabitants in reciprocal interaction with their planetary host, the earth. Nor has culture, since its inception, ever had a "symbolic immunity," as Baudrillard claims in his reflections on the virus. As a fragile system, culture was and is – if we prefer not to think of it as a sclerotic conservatorium – always assailable, and what's more: It is precisely this assailability that makes it malleable in the first place. Humans and nature exist – as do humans and machines – in a non-trivial relationship of mutual interdependencies. That means that they reciprocally destroy one another but are likewise able to reciprocally learn and profit from one another.

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7.

Telematics means a mode of communication in which the message is removed from the body of the messenger.[7] Not only do messages independent of the body of the messenger travel much faster through the telematic networks. They also become *ubiquitous*, are everywhere at once. In this way they establish a phenomenon of the *rational* that resides outside the body, which can therefore be deemed an artificial *ex*telligence. In the system of artificial *ex*telligences, viruses rank among the tactics, perhaps even the guarantors of effectuation. The minute we leave the highly secured non-terrain of the virtual and enter into the atmosphere of the rumbling, oscillating, uncontrollable real, the intelligent entity exposes itself. That is not only its greatest risk. It is also its greatest fortune. "The mouth comes into being with the scream," wrote Heiner Müller in his *Nachtstück*.[8]

As the medial producers that we are, we belong among the "traders of the winds." We deal in illusions, in that which one can neither lay hands on nor rely on. The very least that ought to be demanded of us (and that we should demand of ourselves) is that we plumb the etymological depths of the meaning of this malapropism and then take very seriously the fact that the Latin verb *illudere* does not only mean to fib, to fool, to make a beautiful semblance. It also means to take a risk, to put something at stake. That's the privilege and the obligation of those whose creative activities are officially classed at the start of 2020 as non-system relevant.

In his published postscript to a 1988 lecture at the Ars Electronica festival in Linz (Austria), the teleological thinker Baudrillard surprised us right at the end, with a twist he put in parentheses:

> (But the recent appearance of electronic viruses does present us with a noteworthy exception: one might say that herein is revealed the machine's *schadenfreude* to generate or increase perverse effects and to annihilate its own functionality by way of its own operations. That's an ironic and interesting twist. It could be that the artificial intelligence parodies itself with this latest viral pathology and in this way develops a kind of real intelligence.) (Baudrillard 1989, 131)

7 Cf. in depth Zielinski 1990.

8 Here cited from Karl-Heinz Barck's magnificent text "Artaud" (Barck 1996, 10).

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The most awful of all possible conditions – to which we now must collectively return – is normality. At the moment, this is being extolled as a return to Paradise Lost. The playwright Heiner Müller told the story, briefly and impressively, like this: "I had a dream. It was a nightmare. I woke up and everything was back in order."[9] – Order is a sign of lack. We need the abundance that embraces disorder. Only out of abundance will art, poetry and design, as wasteful praxes, develop to the highest level.

New faculties: The arts and the thinking & making to be designed/created

Now, what can interventionist thinking and doing mean in those spheres in which we are active as *subjectiles*?[10] How do we deal experimentally with our realities, which have become hybrids of nature and technics, of the biological and the technological? What sort of consequences might we draw for the microuniverses for which we are responsible and inside of which we think and act – namely, academies, colleges and universities of art and design?

In light of the present confusions, once again in our history two poles peel away, two modes of potentially constructive intervention. The obvious one is a cybernetically based pragmatism, like that represented in pandemic debates by, among others, Benjamin H. Bratton (2020). This pragmatism trusts in the logic of applied social sciences, which by this point are undergirded worldwide by advanced information technology, sophisticated statistical procedures and probability calculations. It pursues the *sense of reality* and the hope that even the last remainders of the real might be mastered by what amounts basically to technical reason. The tension-filled alternative is grounded albeit unbridled speculation. This is bound above all to the *sense of possibility* and permits itself the freedom and thus the luxury to think and forge horizons.

My trust in statistics and purpose-driven data administration is limited. Thinking, designing, aesthetic doing should never become

9 Heiner Müller, *Wolokolamsker Chaussee IV: Kentauren* (1986), here cited from FM Einheit's acoustic experiment "Resistance" on the MusicAeterna platform: https://musicaeterna.org/en/media/fm_5_resistance/.

10 This neologism, formed of the words subject and tactile, was invented by Antonin Artaud; Jacques Derrida wrote an extensive commentary on it in his essay "Forçenerle subjectile," in Thévenin and Derrida 1986.

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domesticated. The constant effort to make a move into the open, to travel into the unknown is what allows us, like an ethnologist, to see the alien inside our own and to let unfold the "continuity between matter and the power of imagination." "Matter and dreams forge paths that are not the same but that correspond."[11] As a materiologist, I proceed, with the Arabic polymath and philosopher Avicenna, from the assumption that form is the *fiery truth* of matter. What is possible as material sensation is by no means exhausted by what has already become of it. And this is what yields the possibility and nourishes the freedom to go on dreaming forward.[12]

On the horizon, an *imagined academy* is taking shape, not unlike Italo Calvino's imagined cities, in which there are an enormous variety of disciplines that cannot be established because they resist institutionalization and that will remain un-chaired because one does not sit them out. They are not only too complex for these things, but too fractious. Rather, the fields we are dealing with are energy fields, motivation fields, irritation fields and their associated faculties – in the best sense of the word: as indissoluble units of *poiesis* and intuition, of making and theory. They have the character of temporary *transversal cuts*,[13] of *diagonal praxes* that are in a position to mediate between the arts and sciences.

DIGNITY is the most important faculty, the elaboration of which we will have to re-learn and to re-teach. At the University of Glasgow in Scotland, one of Europe's oldest academic professorial chairs is dedicated to this. What's at stake in this sort of faculty – beyond the Christian-influenced ethics of the age-old position itself – is the elaboration of an all-encompassing respect as a life principle. They practice – in thinking and doing – the appreciation of the Other, which entails not only other ways of thinking, other genders, other cultures, but also the Others of nature and technics.

This sort of intellectual as well as artistic activity, which is conscious of the reciprocal interplay between the different agencies of

11 I am following and quoting here from Roger Caillois's essay on the octopus (Caillois 1973).

12 This forward-dreaming is a rhetorical figure from the philosophy of Ernst Bloch, whose re-reading of Avicenna I am referencing above (Bloch 2018).

13 Cf. Caillois 1964. It's here that Caillois develops the demand "to give diagonal sciences a chance."

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Fig. 2 Grandville, J.-J., Joseph Mery, Raban, and Emmanuel Brice. 1849. *Les Étoiles: Dernière Féerie. Par J.-J. Grandville. Texte par Mery. Astronomie des dames, par le Comte Foelix*. Paris: G. de Gonet.

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nature and technics, necessitates a faculty of the ATMOSPHERIC, of which we, as inhabitants of Earth, are a constituent part. The atmosphere is our host. We need it to exist (persist), while, existentially speaking, it does not need us. We have acquired a more than potentially viral character for the atmosphere.

Unpredictable and unexpected events require that we cultivate extraordinary expertise in EXTRAORDINARY MEASURES. In West Berlin in the late 1980s, Kurt Jotter founded the activist group FDGÖ (Foto, Design, Grafik, Öffentlichkeitsarbeit – or: photo, design, graphics, public outreach); performing as the Bureau for Unusual Measures, the group made art interventions in public space. This collective got by just fine absent the power-seeking vanities of the Zentrum für Politische Schönheit (ZPS).[14] Their key zone of intervention was urban communications, particularly under the conditions of telematic relations that were then establishing themselves (*Relation-Chips*, 1984). Comparable groups emerged time and again throughout the 20th century, from the Stray Dogs in pre-war St. Petersburg to Gruppe SPUR and the Situationists. We are always in need of groups like these when it comes to intervening in saturated relations and irritating comfortable harmonies.

Under conditions of highly networked communication relations and the increasing technification of our ways of living, extraordinary measures like these might be articulated in a faculty that we could call – with international activists like Julian Oliver, Danja Vasiliev, and Gordan Savičić – CRITICAL ENGINEERING. Under such rubric, we understand an equally constructive and critical, theoretical and practical activity that follows from interventionist thinking and that is commensurable with elaborated, networked machines. This then puts us in a position to reinterpret, or to occupy in strange ways, artifacts as well as the concrete technical systems in which they are bound. It would be a logical continuation of a faculty for PATAPHYSICS.

A faculty like this is closely connected with techno- and poetological work on NON-CENSORABLE, or better: HARD-TO-CENSOR SYSTEMS, which represents one of the greatest challenges to art and design in the coming decade. On the occasion of our international conference "Potential Spaces" in February 2017, Chinese media theorist Gao Shiming of the China Academy of Art surprised everyone

14 https://politicalbeauty.de/.

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with the first draft of his "Hacking Media/Art Manifesto," which was also intended as a position statement for his future activities as Dean in Hangzhou. In it, he pleaded the case for a "Neo Media/Art" that needs to orientate itself to and adopt those information technologies through which mechanisms of dominance under advanced capitalism are realized as data politics and data control. It is only through the critical application of these technologies against their own mechanisms of surveillance and control, according to Gao (2019, 50), that the latter can be effectively exposed: "Neo Media/Art has to make the media in our hand the most incisive and controversial content, thereby resisting against the new technologies of control and seduction."[15]

We also need to pay special attention to the training of future CHAOS-PILOTS and KAIROS-POETS. If, under the banner of expanded possibilities for intervention at the interface of media-humans and media-machines, it so happens that creativity has become a foundational social competence and the traditional model of the artist is exhausted in the art itself – even as it advances to become a guiding model for social activity in general – then it seems advisable at least to work toward supplementary identities. The competencies that artists and intellectuals urgently need for the future can be understood (especially after the pandemic of 2020) as tactical figures that do not let themselves get transposed or deployed as strategies: *chaos-pilots* and *kairos-poets* – figures who are in a position not just to handle unpredictabilities but who can also organize them while still refusing to administrate them, figures who can seize the fortuitous moment (on film, on the web, on stage, in the gallery, in the auditorium, in the museum) and give it a charge. Without a tendency toward complexity and without a tendency toward time – the two are inextricably bound – neither advanced thinking nor advanced aesthetic practice are even imaginable.

Just like we need artists and designers who are in a position to intervene in those temporal structures that undercut our perception on the micro-scale (as in high-frequency trading), we also need thinkers and poets who can overflow our time-space perceptions on the macro-scale (as in astrophysics). I call this faculty PALEOFUTURISM. It would be ideally suited to explore and develop the spaces of

15 In the same conference publication, there is also an early and more detailed description of my proposed new faculties.

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possibility of past and future presents and to generate from these the sorts of surprises in the relationship between media-humans and media-machines that are essential to our lives.

I am likewise calling for a re-start of pataphysical projects as an elaborated CULTURA EXPERIMENTALIS. In Critical Engineering we already find a counter-proposal to the culture of testing and system-optimization. Doubtless the uncompromising nurturing of a culture of experiment ought to rank among the core faculties in academies of art and design.

And if in the end we are to take seriously the challenge of a non-territorial orientation, we will be unable to avoid putting back into the foreground of our anticipatory attention those skills that comprise the KNOWLEDGE OF THE WINDS AND NAVIGATION. This faculty used to be decisive, back when relationships of exchange – whether of knowledge, goods or cultural experiences – were still principally generated through watercraft. And it will again become an essential component of our future knowledge. From a pacific or oceanic perspective, this state-of-affairs might be liable to a completely new interpretation of a "move into the open" (Dietmar Kamper). The courage and techniques needed to navigate across great distances in apparently unbounded and definitively ungovernable space are clearly distinguishable from those required to negotiate within the proximity of territorial neighborhoods.

At no point should we cease to PROJECT ALTERNATIVE WORLDS; nor should we quit working to realize a borderless HOSPITALITY – as an essential component of an *unconditioned university* in the Derridean sense, in the sense of an unconditioned dialogue in which WE are the space of possibility.

Almost limitless modes and media are available to us in the arts, in design and in thought, in which faculties like these could operate effectively. It is up to us, whether and how resolutely and under what connections we decide to use them.

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Authors and Editors

Christian Ulrik Andersen, PhD, has published widely on digital aesthetics and interface criticism, including *The Metainterface* (MIT Press, 2018, with Søren Pold). He is the co-founder of Digital Aesthetics Research Center (DARC) at Aarhus University (2002), co-organized the Read_me festival on software art (2004, with Olga Goriunova and Alexei Shulgin), and has since been a regular speaker and panel organizer at various media art festivals, events and conferences. He is the co-founder and co-editor of *A Peer-Reviewed Journal About* (2014, with Geoff Cox), an open access journal that addresses the ever-shifting themes of digital art and culture. He has been a Jens Christian Skou Junior Research Fellow at Aarhus Institute of Advanced Studies and is currently Associate Professor at the Department of Digital Design and Information Studies, Aarhus University.

Malte Bergmann is a research associate at the Design Research Lab of the Berlin University of the Arts. He studied sociology, psychology and ethnology at the Free University of Berlin. In 2013–2018, he headed the office of the German Society for Design Theory and Research (DGTF). As a fellow in the German-Israeli design research project "Community Now," he was involved in research and teaching at the Social Living Labs in Berlin and Jerusalem from 2013–2016, and in the research project INTERPART from 2018–2021.

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Peter Bloom is a community digital defence activist and the founder and General Coordinator of Rhizomatica, an international non-profit that helps communities build their own communications infrastructure. He is a former Shuttleworth Foundation fellow and was named an Innovator under 35 by MIT Technology Review and appeared on Foreign Policy's 100 Leading Global Thinkers list in 2015. Bloom can be reached via Twitter (@rhizomatica) and www.rhizomatica.org.

Elizabeth Calderón Lüning is associate researcher at the Weizenbaum Institute, Berlin. In the research group "Inequality and digital sovereignty" she focuses on democratic deliberation of digital policy within the urban context and the notion of digital sovereignty as the individual and collective freedom and right to actively partake in the shaping of digital life worlds. As co-founder of the Digital City Alliance Berlin she seeks to ensure a fairer and more equitable city for city dwellers in the digital age. As co-founder of Common Grounds, she researches, consults and teaches on the topics of neighborhood participation, organizational development and networking. Elizabeth received her diploma in political science from the Free University of Berlin.

Common Knowledge is a not-for-profit worker cooperative based in London, Glasgow and Brighton. We design and build digital technology that supports, amplifies and extends the work of grassroots organizations and communities. We share a vision of a world where people are confident in their capacity to self-organize, empowered by digital technology. We have worked in collaboration with a diverse range of organizations, including Progressive International, Citizen Sense, Community Organisers, London Renters Union and The New Design Congress. We take an expansive approach to collaboration, looking for opportunities to cross-pollinate and share knowledge between different parts of the ecosystem. We have a core team of four members, whose skillset includes political organizing, strategy, software engineering, user research, project management, graphic and digital product design.

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Juan Pablo García Sossa (JPGS) is a designer, researcher and artist from Bogota and based in Berlin. He is fascinated by the clash between emerging technologies and grassroot popular culture in tropical territories. His practice explores the development of cultures, visions, realities and worlds through the remix and re-appropriation of technologies from a Tropikós perspective (tropics both as region and mindset). He is currently a design research member at SAVVY Contemporary – The Laboratory of Form-Ideas' Design Department in Berlin and Co-Director of Estación Terrena, a space for arts, research and technologies in Bogotá. JPGS is a 2020 Rapid Response for a Better Digital Future Fellow at EYEBEAM.

Adam Greenfield is an American writer and urbanist, based in London.

Claudio Guarnieri is a security researcher and a free software developer. He researches the use of technology as a means for repression, and provides assistance to human rights organizations, journalists and activists with issues of computer security, privacy and surveillance. Currently, he is the Head of Security Lab at Amnesty International and a core member of The Honeynet Project. He also co-founded Security Without Borders. In 2014 he was selected as one of Wired Italy's 50 "Persons of the Year." He collected the EFF Pioneer Award 2015 with the Citizen Lab, and he's been selected by Forbes among the "30 Under 30" honorees for 2016. Claudio is also an artist, developing works that deal with privacy, surveillance and the digitization of modern society.

Adam Harvey is a researcher and artist based in Berlin focused on computer vision, privacy and data politics. His previous work includes CV Dazzle (camouflage from face recognition), the Anti-Drone Burqa (camouflage from thermal cameras), SkyLift (geolocation spoofing device), and Exposing.ai (interrogating face recognition datasets). His art and research has been featured widely in media publications including the New York Times, Financial Times, Wall Street Journal, Washington Post and shown at institutions and events including V&A

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museum (UK), Seoul Mediacity Biennale (KR), Frankfurter Kunstverein (DE) and the Utah Museum of Contemporary Art (US). Harvey is the founder of VFRAME.io, a project that develops computer vision tools for human rights researchers and investigative journalists.

Bianca Herlo is a researcher and lecturer based in Berlin. Within the research group Inequality and Digital Sovereignty at the Weizenbaum Institute, Berlin University of the Arts, she focuses on the digital and social divide, digital participation, design and digital transformation. At the Design Research Lab of the Berlin University of the Arts she has been researching and teaching in the fields of Social Design and Civic Design. Since 2014, she has been a board member, and since 2021, chair of the German Society for Design Theory and Research (DGTF).

Daniel Irrgang is a research associate at Weizenbaum Institute, where he is part of the Berlin University of the Arts research group Inequality and Digital Sovereignty. He holds a PhD in media studies on diagrammatics and expanded mind theories. Among other fields, his research focuses on visual depictions of information from a media theory/cognitive studies perspective, HCI paradigms, exhibition concepts as well as on epistemological problems. Daniel is affiliated researcher with the Art as Forum center at the University of Copenhagen.

Fieke Jansen is a PhD candidate at the Data Justice Lab at Cardiff University, where she is looking at the practice of data-driven policing in the context of Europe. Fieke is also a Mozilla public policy fellow in which she looks at how people inside and outside public institutions are negotiating and resisting artificial intelligence. Prior to the start of her PhD, Fieke worked as a practitioner on human rights, digital security and privacy.

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Gesche Joost, Professor of Design Research at the Berlin University of the Arts, is a researcher, founder, political advisor and tech consultant. Her work focuses on the digital transformation and its implications on our society both in her research practice and on the policy level. She runs a research lab at the German Research Center for Artificial Intelligence specialized in human-computer interaction and wearable computing and is part of the Weizenbaum Institute in Berlin.

Denisa Kera is a philosopher and designer experimenting with creative strategies of public engagement in emerging science and technology issues. She is recognized for her pioneering work combining design with ethnography in the research of the so-called hackerspaces and citizen science laboratories around the world. She spent the last decade as an Assistant Professor at the National University of Singapore, a Marie Curie Research Fellow at the University of Salamanca, Senior Lecturer of Future Design in Prague College and a Visiting Assistant Professor at Arizona State University, where she continues to cooperate as an affiliate member with the Center for the Study of the Future.

Hagit Keysar is currently a postdoc fellow of the Minerva Stiftung (2019–2021), working within the Data Natures research group in the Natural History Museum, Berlin. Her research is practice-based and brings together visual work, activism and critical theory. In her PhD thesis and later work, she explores civic/community science and open-source practices, focusing on the political potentials of do-it-yourself kite/balloon photography and drones for articulating rights and politics in situations of conflict and colonization.

Jules LaPlace is a programmer and musician working in Berlin. Their work explores interface design as a lens for artistic practice, and has facilitated works shown at the Venice Biennale, Serpentine Gallery and the Centre Pompidou, as well as digitally at KW Berlin, e-flux, and the NeurIPS creativty workshop. They contribute to Exposing.ai, the VFRAME computer vision project, and make cosmic music as part of Magisphere.

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Li Zhenhua has been active in the artistic field since 1996, his practice mainly concerning curation, art creation and project management. Since 2010 he has been the nominator for the Summer Academy at the Zentrum Paul Klee Bern (Switzerland), as well as for The Prix Pictet (Switzerland). He has been a member of the international advisory board for the exhibition "Digital Revolution" at the Barbican Centre in the UK in 2014 and a member of the international advisory board for "Videotage" and "Symbiotica" in 2015.

Paola Pierri is currently Head of Design and Research at Democratic Society, where she is exploring the social implications of digitalization on society at large and the impact of digital technology on our democratic practices and our public space. She has a doctorate in Design Anthropology from the London College of Communication, where she studied the work of Cornelius Castoriadis on the "radical social imagination" and its implications for the concept and practices of creative democracy. Her research interest focuses on different elements of the connection between digital and democracy. She has previously done research in the field of digital inequalities in mental health service in the UK and was also Research Fellow at the Weizenbaum Institute. She is currently visiting professor at the Polimi in Milan, teaching on the topic of design justice and digitalization of public services.

Julia Pohle is a senior researcher in the research group "Politics of Digitalization" at the WZB Berlin Social Science Center. She holds a PhD in communication studies from Vrije Universiteit Brussel and an MA in cultural studies, philosophy and computer science from Humboldt University Berlin. Among other academic roles, Julia currently serves as academic editor of the Internet Policy Review, as co-chair for the Communication Policy & Technology Section of the International Association for Media and Communication Research (IAMCR), on the Editorial Board of Media and Communication, and on the Steering Committee of the Internet Governance Forum Germany (IGF-D).

Søren Bro Pold is an associate professor of digital aesthetics at Aarhus University. He has published on digital and media aesthetics

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– from the 19th century panorama to the interface in its different forms, e.g., on electronic literature, net art, software art, creative software, urban and mobile interfaces, activism, surveillance culture and digital culture. His main research field is interface criticism which discusses the role and the development of the interface for art, literature, aesthetics, culture and IT. Together with Christian Ulrik Andersen he edited the anthology *Interface Criticism* (2011) and authored *The Metainterface – The Art of Platforms, Cities and Clouds* (2018).

Thomas Ramge's work reflects how intelligent humans can make use of data-rich technology in intelligent ways. In 2020 he became a research fellow at the Weizenbaum Institute for the Networked Society. As a researcher, tech-author and journalist, he has published more than a dozen books and numerous articles connecting the dots between technology, its impact on business and management and its consequences for society and policy-making. As a writer Thomas has been honored with multiple journalism and book awards, including the Axiom Business Book Award 2019 (gold medal, economics) and the getAbstract International Book Award 2018. His books *Reinventing Capitalism in the Age of Big Data* (with Viktor Mayer-Schönberger) and *Who's Afraid of AI* have been translated into 18 languages.

Francesca Schmidt studied German language and literature, German linguistics and South Asian society, history and politics in Heidelberg and Berlin and graduated with a thesis on the commemorative culture in Marlene Haushofer's prose. At the Gunda Werner Institute for Feminism and Gender Democracy, Francesca Schmidt is a consultant for Feminist Net Politics. She deals with issues of digital violence, surveillance and control, algorithms and their socio-normative implications. She is author of the book *Netzpolitik. A Feminist Introduction* (2020), a founding and board member of Netzforma* e.V. – Verein für feministische Netzpolitik. Among other things, she has worked on the topic of queer-feminist media production, using the example of slutwalks, and built up a digital archive at the University of Siegen for this purpose.

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Mona Sloane, PhD, is a sociologist working on design and inequality, specifically in the context of AI design and policy. She frequently publishes and speaks about AI, ethics, equitability and policy in a global context. Mona is a Senior Research Scientist at the NYU Center for Responsible AI, and an adjunct professor at NYU's Tandon School of Engineering, as well as a fellow with NYU's Institute for Public Knowledge (IPK), where she convenes the Co-Opting AI series. She serves as the inaugural director of the *This Is Not A Drill* program at the NYU Tisch School of the Arts, and as the technology editor for Public Books. Recent projects Mona has led as principal investigator include the Terra Incognita NYC project, an investigation of New York City's digital public spaces in the pandemic, as well as the AI Procurement Roundtables Project.

Ramesh Srinivasan (@rameshmedia) is Professor of Information Studies at UCLA. He makes regular appearances on NPR, MSNBC, Radio Pacifica, The Young Turks, the BBC and other major networks. His writings and insights have been published in the Guardian, LA Times, New York Times, Washington Post, CNN, Wired and elsewhere. His newest award-winning book exploring the future of technology, *Beyond the Valley: How Innovators around the World are Overcoming Inequality and Creating the Technologies of Tomorrow*, was released in 2019 from MIT Press.

Philipp Staab, born 1983, is Professor of Sociology of the Future of Work at Humboldt University Berlin and at the Einstein Center Digital Future. In his research, he combines topics of work, social inequality, sociology of technology and political economy. Currently, he works on questions of the political regulation of digital capitalism, the connection between digitalization and sustainability, and the role of critical infrastructures for the sustainability of modern societies.

Sandra Stark is a designer, design researcher and somatic practitioner based in Berlin. Her work uses the body as an epistemic resource, combining somatic practices with design research methods to design frameworks for embodied co-research and knowledge

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co-production. She holds an MA in Visual Communication from weißensee kunsthochschule berlin and is a student of the Pantarei approach (pantareiapproach.com). She is currently working as a researcher at the Design Research Lab of the Berlin University of the Arts, as part of the research project INTERPART (2018–2021).

Thorsten Thiel is a political scientist and leader of the research group Democracy and Digitalization at the Weizenbaum Institute for the Networked Society. From 2013 to 2017 he was the coordinator of the Leibniz Research Alliance "Crises in a Globalised World" and a postdoc researcher at The Formation of Normative Orders cluster of excellence (2010–2013).

Andreas Unteidig is a design researcher and consultant based in Berlin, where he is currently an associated researcher at the Weizenbaum Institute (research group Inequality and Digital Sovereignty). He teaches design studies at several universities and has held visiting professorships at Unviersidad El Bosque, Bogota (2019) and Braunschweig University of the Arts (2018–2021), where he directed the interdisciplinary MA program Transformation Design. Andreas studied design in Cologne (KISD) and New York (Parsons | The New School) and holds a doctorate from Berlin University of the Arts. His academic work is practice-based and explores the intersections between design, technology and processes of social change.

Danja Vasiliev (Russian: Даня Васильев) is a media artist, critical engineer and educator born in Saint-Petersburg currently living and working in Berlin. Vasiliev studies systems and networks through anti-disciplinary experimentation with hardware, firmware and software. Using computational platforms, he engages in examination and exploitation of system and network paradigms in both the physical and digital realms. He has received awards and mentions at Ars Electronica, Japan Media Art Festival, and Transmediale, among others. In October 2011, together with Julian Oliver and Gordan Savičić, he co-authored "The Critical Engineering Manifesto." Vasiliev propagandizes open source practices in all facets of life.

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Yang Jing is a curator, writer and game designer based in Hong Kong. Her curatorial work spread from the physical to the virtual. She is particularly interested in building games as curatorial spaces. She and artist Alan Kwan recently collaborated with DSL COLLECTION and produced the art destruction game Forgetter in 2021. When she is not making games, Yang Jing is devoted to curating and writing about them.

Siegfried Zielinski is Michel Foucault Professor of Media Archaeology & Techno-Culture at the European Graduate School (C.H.), honorary doctor and professor at the Budapest University of Arts, and Professor Emeritus of Media Theory at Berlin University of the Arts. He was founding rector (1994–2000) of the Academy of Media Arts Cologne, director of the Vilém Flusser Archive (1998–2016) and rector of the Karlsruhe University of Arts & Design (2016–2018). Zielinski has published extensively on the archaeology and variantology of the arts and media.

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