

The background of the cover is an abstract composition of light trails and blurred shapes. A prominent feature is a bright, glowing yellow and white arc that curves across the upper half of the image. Below this, there are various green and yellow streaks and spots, suggesting motion or energy. In the lower right, a faint, blurred figure of a person is visible, possibly wearing a head-mounted display or similar technology. The overall color palette is dominated by greens, yellows, and oranges, with a dark background.

RECLAIMING TECHNOLOGY

a poetic-scientific vocabulary

Edited by

James Maguire & Brit Ross Winthereik

Reclaiming Technology

a poetic-scientific vocabulary

Edited by

JAMES MAGUIRE & BRIT ROSS WINTHEREIK

Reclaiming Technology - a poetic-scientific vocabulary

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Edited by James Maguire and Brit Ross Winthereik.

Andrea Ballestero, Rachel Douglas-Jones, Jennifer Gabrys, Christopher Gad, Line Henriksen, Michael Hockenhuil, Caroline Salling, Priscila Santos da Costa, Helen Verran, Vasilis Vlassis, Marie Blønd, Geoffrey C. Bowker, Baki Cakici, Andy Lautrup, Adrian Mackenzie, James Maguire, Vasiliki Makrygianni, Laura Watts, Steven Brown, Katrine M. Kjær, Celia Roberts, Thorben Simonsen, Brit Ross Winthereik, Astrid O. Andersen, Jonas F. Jessen, Barbara N. Carreras, Vasilis Gallis, Mace Ojala, Irina Papazu, Irina Shklovski, Line Thorsen, Steffen Dalsgaard, Ingmar Lippert, Atsuro Morita, Jessamy Perriam, Sunniva Sandbukt, and Sachiko Matsuyama.

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INTRODUCTION

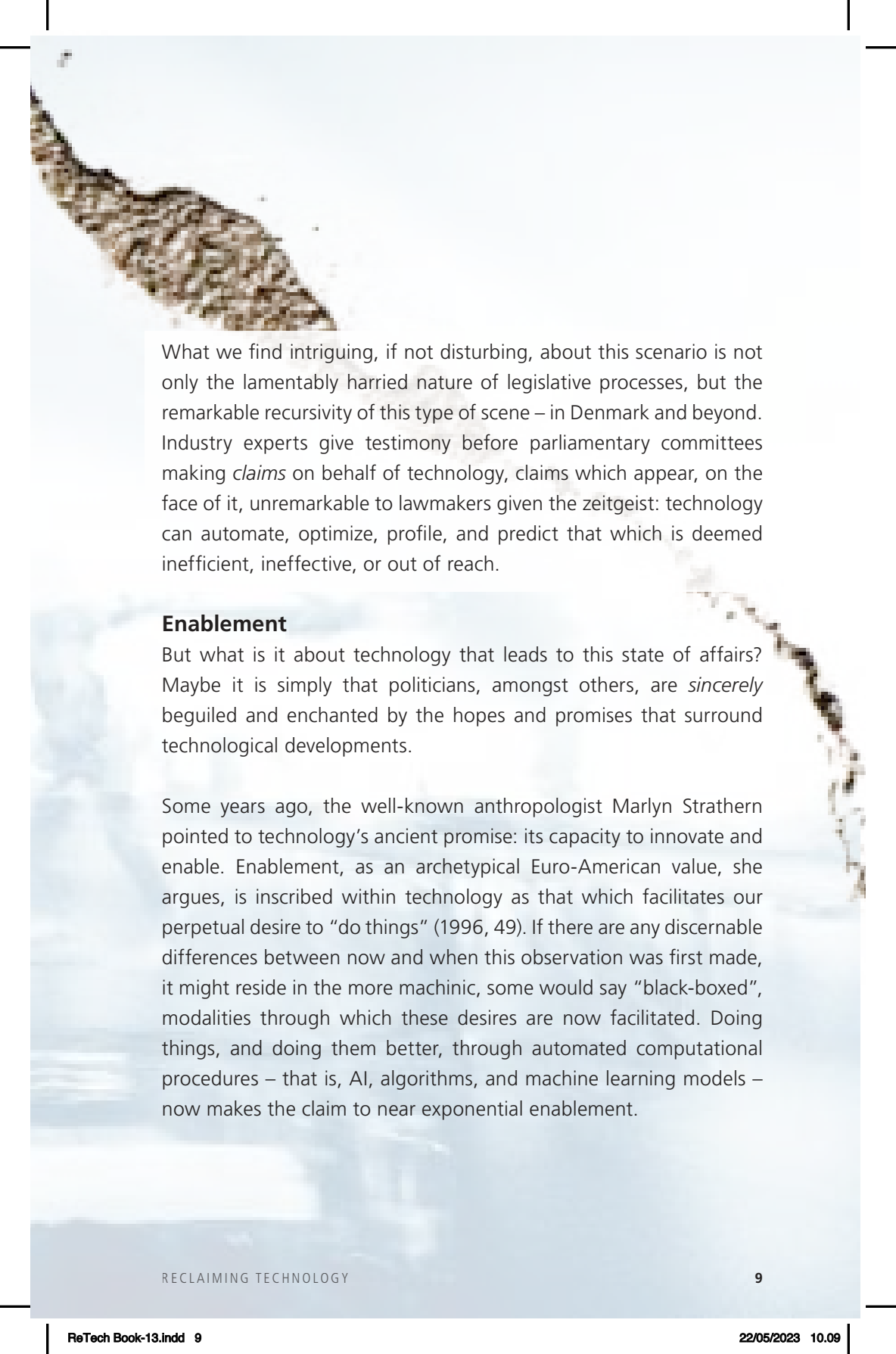
James Maguire and Brit Ross Winthereik

Claims Making

The scene: a Danish TV press conference with members of parliament.

Under discussion: the likely implications of a tax law passed three months prior, L72, that gave the Danish tax authorities the legal basis for developing a predictive algorithm to target “tax cheaters”. Such an algorithm works by creating profiles of citizens or organizations deemed likely to cheat on their taxes using mathematical probabilities. Actual citizens or organizations that fall within this statistical range can then be singled out for further audit and assessment. In short, parliament gave the tax service a legitimate mandate to scrape public and private online data (including SoMe platforms, trading sites, and welfare services), constituting one of the most extensive surveillance nets the country has seen to date.

The response: politicians meekly acknowledge that many of the bill’s ramifications had not been sufficiently considered during the original “expert” testimony and backtrack on its adoption by parliament. None have a coherent answer for the inclusion of industry and tax experts and the exclusion of public accountability advocates. This latter group – members of the national Data Ethics Council and justice-based think tanks – were only invited to parliament after the bill was adopted.



What we find intriguing, if not disturbing, about this scenario is not only the lamentably harried nature of legislative processes, but the remarkable recursivity of this type of scene – in Denmark and beyond. Industry experts give testimony before parliamentary committees making *claims* on behalf of technology, claims which appear, on the face of it, unremarkable to lawmakers given the zeitgeist: technology can automate, optimize, profile, and predict that which is deemed inefficient, ineffective, or out of reach.

Enablement

But what is it about technology that leads to this state of affairs? Maybe it is simply that politicians, amongst others, are *sincerely* beguiled and enchanted by the hopes and promises that surround technological developments.

Some years ago, the well-known anthropologist Marlyn Strathern pointed to technology's ancient promise: its capacity to innovate and enable. Enablement, as an archetypical Euro-American value, she argues, is inscribed within technology as that which facilitates our perpetual desire to "do things" (1996, 49). If there are any discernable differences between now and when this observation was first made, it might reside in the more machinic, some would say "black-boxed", modalities through which these desires are now facilitated. Doing things, and doing them better, through automated computational procedures – that is, AI, algorithms, and machine learning models – now makes the claim to near exponential enablement.

We are routinely exposed, and have become habituated, to the seductions of technology's promise. We grasp and cling to the enabling powers of climate technologies, welfare technologies, and health technologies, to name but a few: those technologies that make society's "grand challenges" amenable to computational and, increasingly, predictive solutions.

The claims made on behalf of technology continue to be beguiling partly because enablement is something Euro-Americans hold dear. There is a certain irony at play here as that which is enabled is not simply our capacity to enhance ourselves and improve the worlds in which we live: there is simply "more of everything" (Strathern 1996, 46), including, importantly, the means to "undo ourselves" (ibid.). Here Strathern is reminding us that enablement, lest we forget, also "enables" what many might consider to be the downsides of technological innovation and development. Maybe this is what is at the heart of Danish political naivety when confronting technological claims. The imperative "to do things" can activate long-held values of enablement, where "doing something" is deemed not only necessary, but virtuous. Although, given that we continue to produce technologically related problems at rates faster than our means of acting upon them, it is perhaps unsurprising that our decision makers fall prey to a more anemic understanding of enablement. This, however, does not leave them, or us, free from responsibility.

It is for these reasons we want to articulate our desire to *reclaim technology* as an effort, in some small way, to shift the grounds upon which technology claims can be made. Importantly, this is not a call to stop making claims on behalf of/through technology, technological processes, artifacts, or networks. **Rather, it is about simultaneously delimiting and expanding the horizons upon which such claims can be made.** *Reclaiming* is, in this regard then, a form of critique, understood in the more Kantian sense of the term (1999) as describing, analyzing, evoking, and imagining the "conditions of possibility" for just and ethical socio-technological

worlds: an evocative means of engaging technology as well as a conceptual and critical intervention into the current, and future, state of technological affairs.

Reclaiming is neither a manifesto nor a pledge that makes promises about how to design technologies in more ethically informed ways. These efforts already exist and, while admirable, are based upon an understanding of ethics as something that can be designed for. For the authors of this book, such an understanding is too restricted. In our view, ethics is a thoroughly relational concept that must be embedded within all aspects of technological design.

For us, *reclaiming* embodies a variety of meanings all of which share a “family resemblance” (Wittgenstein 1953, 66). It is these resemblances we use to organize the book’s thirty-five contributions. While we will flesh these out in more detail towards the end of this introduction, here we would like to pause and say a few words about how we approached *reclaiming* as a genre of writing.

A poetic-scientific approach

We invited contributors to draw upon their research with technology – as artifact, process, craft, infrastructure, concept, or intervention – and problematize some aspect of it through a form of writing not restricted to the traditional repertoires of academic publishing. Part of the reason for framing our conception of technology so broadly is to counter the various forms of reduction that facilitate the claims making we have been discussing thus far, reductions that see technology as, for example, prosthesis (Jain, 1999): a continuation of the human body that people “use” as “tool” to dominate others and shape environments. Contemporary thinkers have tried to reorient this contemporary fixation on technology as “a thing” under human command. They have shown that not only do technologies also use us, but very often there is no clear boundary to be found between what can be considered purely “human” or “technological”. Some have offered diagnoses and laid out conceptual road maps for technology

as part of our social fabric: for example, as a framing condition for politics (Isin & Ruppert, 2020; Latour & Weibel, 2005), as a mode of knowing (Van Dijck, Poell, & De Waal, 2018), or as a form of global domination (Zuboff, 2022), and much more.

Rather than limit technology's conceptual horizon – which, paradoxically, broadens the grounds upon which more exuberant technicalized claims can be made – we want to push the boundaries of what constitutes the phenomena under investigation through a form of writing we call *poetic-scientific*. Its purpose is to evoke and inspire curiosity around what technology can be, what it can do, its political affordances (who and what it benefits and excludes), and its aesthetics and affect. By doing so we hope we can begin to challenge the grounds upon which exuberant claims are made.

Writing from within the academy, we tend to think that groundbreaking academic work can sensitize managers and decision makers to the unruly complexities of technology as an intricate part of our human condition. We tend to think that politicians have, by now, understood that to live well with technology requires regulative care, maintenance, and frequent monitoring of technological effects. But as our opening vignette signals, this is far from the case.

Taking a poetic-scientific approach renders technology in ways that have the potential to enable alternate claims-making pathways towards more just, grounded and dignified socio-technological futures. But such an approach comes with its own set of commitments to making, thinking, and teaching technology *otherwise*. Asking engineers to be more ethical and responsible is not sufficient. Neither is staying within the logic of the machine whose grounds we want to reclaim: its computational frames, forms, ideologies, and premises. The contemporary desire to develop digital competencies by enhancing tech literacy, coding, working with data, and so forth, while welcome, also feels somewhat myopic. As our opening vignette signals, the problem is of a somewhat larger order than merely tinkering with skillsets.

What then?

Collecting and publishing poetically inflected writing from researchers is hardly a panacea, but it is an effort to organize our thoughts and interventions in ways that open up the conditions of technological possibility beyond purely technical considerations. This is simultaneously a modest and immodest project. Immodest in the sense that reclaiming technology is an inordinate task, yet modest in the sense that this is one pathway amongst many on a journey which we share with others. Reclaiming the grounds upon which technology is conceived, designed, built, and used is an invitation. It is demanding, slow work that encourages community building. Such work, and the forming of collectives around it, is already underway on multiple fronts, be it feminist data manifestos, requests for data and digital justice, intersectional thinking in the sciences, the degrowth movement, “leaving no one behind” initiatives in engineering, or platforms for enhancing the commons. While different, all of these movements share a kinship: working in collective, innovative, and at times joyful ways towards building futures otherwise.

We want to make a contribution to such platforms for thinking and acting. In doing so we draw upon a long tradition of experimental methodologies within Science and Technology Studies (STS), some branches of anthropology, feminist scholarship, and critical media studies. It is impossible to do justice to the richness and variety of these experimental methodologies within the confines of this introduction, but we will mention some of our inspirations.

Speculative research – a genre that *speculates* on the possibility of constructing future worlds from the empirical realities in which we are situated today – is a method of thinking with and against technological utopias and dystopias (Haraway, 2016). Thinking in this tradition can take the shape of the buiding of prompts and prototypes (Wilkie et al. 2017; Corsin 2017; Maguire 2018). Such methods can also be about remembering, as well as a way of carrying past events and

people into imaginaries about possible futures in an analysis (Cohn 2019). One approach lies in the articulation of sets of “propositions” about the world: words and artifacts that might *provoke* publics into being or move them via affective or imaginative registers (Marres 2020; Maguire et al. 2021; Gabrys 2022; Winthereik et al. 2019). A related approach takes bodily or emotional responses to technology into account and sees affect as a *sine qua non* in knowledge creation (Verran, 2021). Here classic scientific methodologies based on distanced observation give way to inclusion of the senses (Helmreich 2016; O’Reilly 2016; Maguire 2021; Douglas-Jones et al. 2018; Ballesterro & Winthereik 2021; Lury et al. 2020).

While more experimental and speculative approaches shape this volume, so to do efforts to break with the more long-form genre of academic writing. Inspiration here has been found in Raymond Williams’ groundbreaking *Keywords* (1975) which itself has inspired a host of more contemporary textual interventions. While some of these interventions aim to map or otherwise lay out foundational terms in any given debate (Peters 2016; Novak & Sakakeeny 2015; Fuller 2008), others seek to catalogue ways of pluralizing and radicalizing our “troubled times” (Szeman et al. 2017; Howe & Pandian 2020), while others again emphasize the uncertainties that thrive in the vicinity of methods that claim certainty (Thylstrup et al. 2021). For us, the potential of a poetic-scientific vocabulary resides less in the ability to catalogue and explain, and more in the ability to open up the horizons of what constitutes technologically meaningful worlds.

Contours of the Book

This book is an evocative, conceptual, and critical intervention into technology. As a vocabulary of technological reclamation, its authors retain a desire to shift the grounds upon which a myriad of technological claims are made. However, reclaiming does not have one absolute or essential meaning; rather, it sits, as we have noted, at the intersection of a “family of resemblances”. Here we want to give the reader a sense of these resemblances as both a thematic guide to the book’s five sections as well as a feel for how the contributions fit together as a collective landscape that can do the work of reclaiming technology.

Rethinking

The first step for us is daring to think otherwise. As scholars working at the intersection of technology-society relations, we often conceptualize in ways that we find exciting and interesting. Yet what leaks into broader public consciousness is, to put it mildly, limited. So, while rethinking as *daring to think otherwise* is a constituent part of our academic DNA, we hope to find ways of doing so that resonate beyond our own immediate community.

In this section contributors provide conceptual interventions into ways of thinking about socio-technical worlds, some of which are familiar (environments, networks, responsibility), others less so (monster, ontics). In addition, there are contributions which have been generated through the concerns and impulses to which technologies give rise. Here concepts are allowed to roam a little more freely as they find their home in less formalized structures (wonder, speculation, inference, bureaucracy, and borders).

Rethinking, then, for us is the first step towards reclaiming.

Redescribing

At the heart of the social scientific method lies redescription: an effort to remake what has already been made. As a category, redescription sits in an overlapping relation to rethinking. Although each could be thought of as a form of the other, there is a distinction we would like to retain. For us, the contributions in this section are strikingly lyrical in their composition, ranging from poetic interventions into socio-technical places and spaces (lab, edge, movements), through evocative mobilizations of ethnographic realities (data centers, state), to well-crafted meditations on technological phenomena (data, machine learning), as well as technological forms and commodities (oil).

The impulse to redescribe is part of making worlds anew and represents, for us, a crucial mode of reclaiming: a descriptive evocation that opens up the boundaries of what we imagine technologies to be, the horizon of what technologies can do, whom they implicate, and how they can be part of dignified ethical futures.

Rebooting

Rebooting is a term with a particular everyday technological valence. For us, it signifies making a fresh start, but under similar conditions. As such it points towards newness, but only partially. It indexes the possibilities inherent in new beginnings in worlds with which we are already familiar, rather than the remaking of new worlds.

Here, we introduce authors who want to offer a fresh take on things known to us, things familiar but which remain, somehow, at arm's length. This distance is, perhaps, the result of their complexity (brain-body), their otherness (the Rat King), their implicitness (healing architecture), their value (evidence), and even their scale (infrastructure).



Regaining

For us, regaining is a form of recovery: something that has been lost or has become invisible or less important, now in need of recuperation. We regain our balance or composure, our health – our consciousness, even. The contributions in this section all speak to practices (maintenance, protest, privacy, art) that were once deemed fundamental but which now teeter on the edge of oblivion, or formations (communities, water, welfare) that constitute central organizational forms of collective living that are now in jeopardy or doubt.

Redeeming

Some things are almost beyond the pale, so “other” that it is difficult to see how they can be rebooted or regained. In these cases, even redescription is not enough. What they now require is akin to the type of forgiveness that emanates from higher powers. Technologies in such need are, for us, in dire straits. More extreme intervention is called for and, as such, they constitute the most difficult to reclaim. The entries in this section cover technological metaphors in extremis (disruption), technologies that have either a savior (blockchain) or sinner complex (carbon, number), and associations that have fallen from on high (collaboration).

Together, we hope that these resemblances offer a sketch that outlines the contours of a landscape of technological reclamation. As with anthropogenic landscapes, reclamation of technology and the remediation it implies must begin in earnest.

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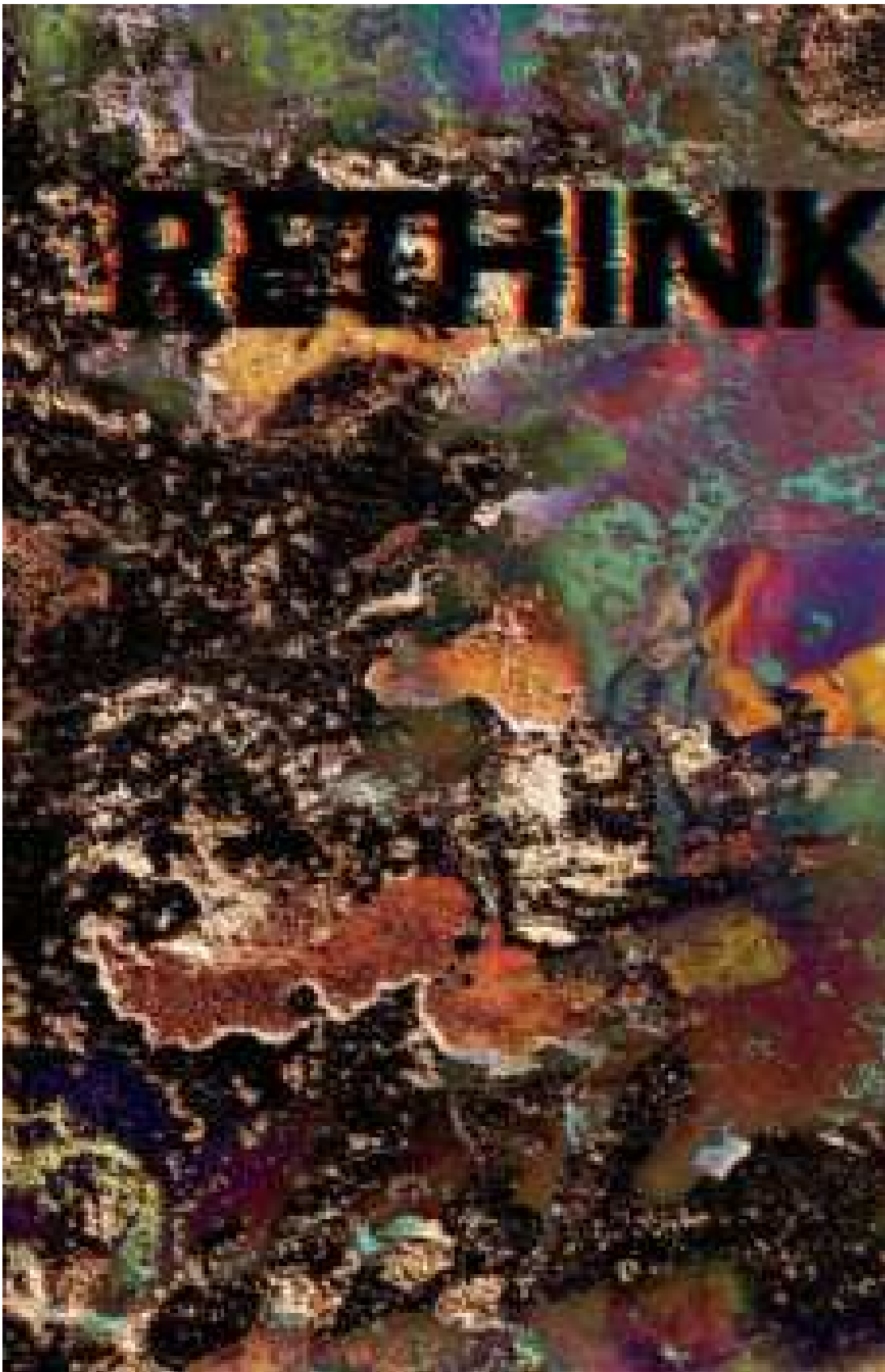
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KING



Photo by Andrea Ballestero

WONDERING

Andrea Ballestero

Crises envelop us. Pick an area of collective life, and a crisis can be found. Look inwards or talk to friends and family. You will find your own body emplaced within one or more crises: inequities, racism, climate change, gender violence, xenophobia.

Notions of crisis, however, carry a particular philosophy of time. They are framed as an interruption to the flow of history. They ignite desires to know the genesis of a crisis and hopes to find its resolution through historical pivot points (Roitman 2013:10-12). The task of defining what those pivot points are and how to make things go back to how they should have been elicits all sorts of struggles over the legitimacy of “solutions” and of those who propose them. But, why go back? What is that previous condition that should have been, to which we want to pivot back, and towards?

What if, rather than punctuating history by analyzing pivotal events, we embraced another, perhaps unusual, disposition. What if, instead of seeking technical turning points, we began by wondering. What if we embraced wonder as an affective condition in which it is imperative to think carefully about things that up to that point might have been considered totally ordinary, and for that reason self-evident (Rubenstein 2006:12).

Wonder is a concept that works both as noun and verb (Swaab 2012). It is passion and thing. It entails a transitive response that leaves one unsettled because it creates an unexpected puzzlement. As one wonders, one feels the urge to inquire more, to act on the urge to act, while also retaining doubt and even the vulnerability entailed in remaining open to new possibilities. Objects of wonder have “questioning and questing” aspects that grab us (Hepburn 1980:27).

They demand a relational duration; we cannot quite let go, doubt remains, we need to take leaps and reside in contradictions. Wonder requires dwelling in order to act, in order to change. This is active doubt, charged consideration, electrified pondering. The repulsion the world often deserves requires dwelling on what might be (im) possible. Wondering, but not elsewhere; wondering, here and now.

Understanding the technicality of collective life through wonder entails immersing oneself in what is historically specific about it: grabbing what is by refusing the coloniality of history and the repressive forces that aim to channel action and thought into pre-determined pathways. Wondering about what is, in order to enact what could be. Wondering about the limits of the possible.

Wonder steps in to take knowing beyond the inert impulse to “master” ideas. Instead, wondering requires a form of sustained engagement, stubbornness, endurance in thinking (Ballestero 2019). It is a methodology, in Katherine McKittrick’s sense: a desire to know that “demands openness and is unsatisfied with questions that result in descriptive-data-induced answers” (McKittrick 2021:5). Wondering is an orientation to knowing that is not satisfied with what is.

Wondering as a technical commitment helps us keep relations between beings, materials, and histories visible and at the forefront. It allows us to dwell in thresholds, political and analytic spaces where ethical distinctions can be entertained without being shut off because they do not count as solutions now, today. Wondering is the method to bring about a future history (Ballestero 2019: 29). By wondering we chisel cracks, we squeeze in, and can open space for collective projects that puncture the limits of the possible.

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INFERENCE

Rachel Douglas-Jones

Inference is a promise. At the intersection of data and behavior, inferential moves make ever-larger collections of data exciting. A tool of discovery, acts of inference appear to offer an explanatory cause or a future prediction. Sometimes glossed simply as analytics, the nature and use of inference are longstanding mathematical and philosophical debates made newly salient, as modelers, simulators, data scientists, and mathematicians work to disentangle causation and correlation, and reach reasonable conclusions (Franke Program 2021; NAS 2016)

Inference is creepy. Back in 2012, it was clunkily so. The widespread reporting of the US company Target sending coupons for baby items to a secretly pregnant teenager near Minneapolis based only on data from her purchase history led to public discussion of how we are known by companies, and the machines they use (Duhigg 2012). Ten years on, profiling and prediction through inference in purchase data is less blunt, less seen by consumers.

Inference is promiscuous. Bound up in climate modelling, health data predictions, marketing, news exposure (Thorson et al. 2019), inference is the epistemically perilous work of attributing cause and effect. Its widespread adoption makes it hard to pin down, and few sites arise where those thinking critically about its role and effects might discuss it. Nonetheless...

Inference is a meeting point for growing practices of data extraction, surveillance tools, and behavioral analytics. In the workplace, so-called “People Analytics” (Heuvel & Bondarou 2016) take data collected under the guise of “efficiency” and “insight” to correlate worker productivity and background in order to make inferences about a worker’s future productivity and value to a company (Colclough 2021).

Inference is ethically charged. When data collected on you is used by and for inferences about others, and data on others is used to build a picture of you, acts of inference turn “innocent” data into signposts for things you have not intended or expected to reveal. Through inference, expectations of privacy might be rocked or undermined entirely. What is done with inferences, verifiable or not, is a decision with ethical consequences.

“End of the Line” by Etienne Boulanger

Inference is in need of governance. An “inference attack” can be used to turn existing data points into an inference about more sensitive information (Gong & Liu 2016). Data can be used to harm. Amassed by large platforms, disparate data have been deployed for predictive ends. Accountabilities for inference are opaque, conclusions are partial, and impacts on lives unclear. Calls for the “right to reasonable inference” in data protection regimes grow (Wachter & Mittelstadt 2019).

Inference is a missing keyword. An inference is not merely a conclusion. It is a process, part of explicit discourses on what can be known and a promise of the knowability of the world. I want to make a case for the ethnographic study of inference as discourse and practice. We have long watched the making of evidential practices, explored both scientific and social knowledge in the making (Camic et al. 2011). Inference in its social form is more shadowy, more tacit, more absorbed in the background justification to “know more”. The leaps, the moves, the connections unseen; the valuations and the reasoning about reasoning matter. The tacit driving promise of inference means it walks largely unnamed through the controversies of our time.

Inference is a knowledge move on the move.
We need to leap with it.

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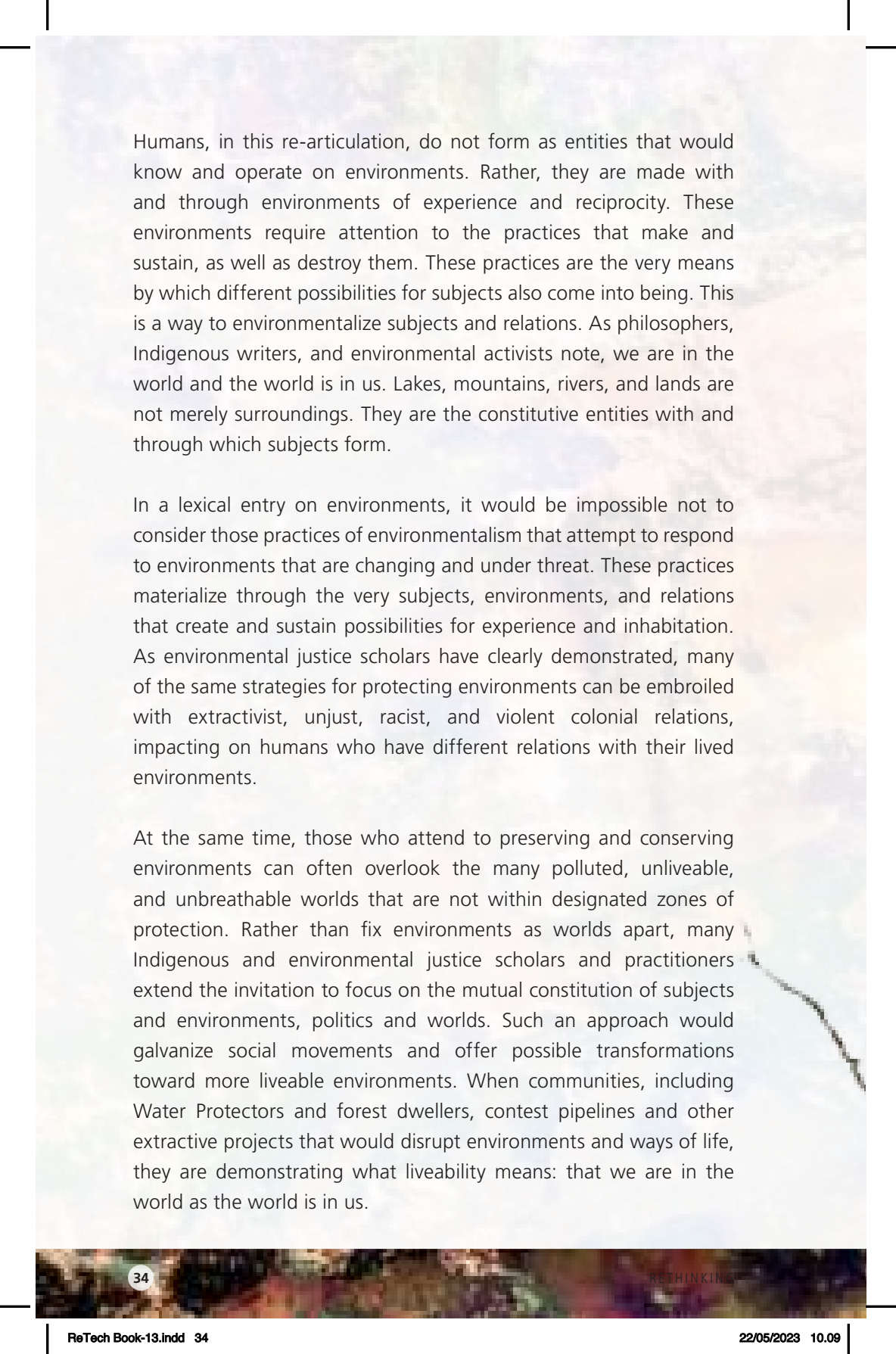
ENVIRONMENT

Jennifer Gabrys

Environments can seem to be everywhere and nowhere. They are configured as surroundings and relations, object and process, distant and intimate. Definitional projects of identifying environments are often described as insufficient or as exclusionary and divisive. Environments could seem to be an artifact conjured by those modest witnesses who distance and abstract planetary life through the workings of a detached and managerial mind. In response, numerous projects attempt to knit together and recast the damaging binaries of the social and the natural, the human and the more-than human.



Yet what if environments are not external separate objects to be known but, rather, are the very processes and conditions through which subjects materialize? Here, environments are not static containers that distinct versions of humans come to know and fix as objects of knowledge. Rather, they are dynamic and interdependent webs of relations and non-relations, sensation and experience, which are articulated across humans, organisms, technologies, and collectives. In a time of planetary transformation and climate crisis, this re-articulation of environments offers a way to engage with and consider the multiple entities that make existence possible.



Humans, in this re-articulation, do not form as entities that would know and operate on environments. Rather, they are made with and through environments of experience and reciprocity. These environments require attention to the practices that make and sustain, as well as destroy them. These practices are the very means by which different possibilities for subjects also come into being. This is a way to environmentalize subjects and relations. As philosophers, Indigenous writers, and environmental activists note, we are in the world and the world is in us. Lakes, mountains, rivers, and lands are not merely surroundings. They are the constitutive entities with and through which subjects form.

In a lexical entry on environments, it would be impossible not to consider those practices of environmentalism that attempt to respond to environments that are changing and under threat. These practices materialize through the very subjects, environments, and relations that create and sustain possibilities for experience and inhabitation. As environmental justice scholars have clearly demonstrated, many of the same strategies for protecting environments can be embroiled with extractivist, unjust, racist, and violent colonial relations, impacting on humans who have different relations with their lived environments.

At the same time, those who attend to preserving and conserving environments can often overlook the many polluted, unliveable, and unbreathable worlds that are not within designated zones of protection. Rather than fix environments as worlds apart, many Indigenous and environmental justice scholars and practitioners extend the invitation to focus on the mutual constitution of subjects and environments, politics and worlds. Such an approach would galvanize social movements and offer possible transformations toward more liveable environments. When communities, including Water Protectors and forest dwellers, contest pipelines and other extractive projects that would disrupt environments and ways of life, they are demonstrating what liveability means: that we are in the world as the world is in us.

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NETWORK

Christopher Gad

The concept of *network* is a widespread term in contemporary social theory as well as other fields, one commonly invoked in public imaginaries of the contemporary “digital age”. As such, it is used, sometimes interchangeably, in both colloquial and analytic ways. Dictionaries define the present day use of the term as referring to complex systems of interlinked entities. It could be argued that its prevalence, as well as a modern sense of “being networked”, are closely related to the historical development of electricity networks (Hughes 1983; Nye 1990), which connected citizens or households in a wider infrastructure. This enabled new ways of life while simultaneously creating dependencies on being networked, a situation which has intensified in more privileged parts of the world today.

In Actor-Network theory, the term network is a critique of the idea of a pre-fixed social order of things: of systems, structures, hierarchies, and discourses imagined to fix, frame, or define the lives or ideas of (human) actors. The concept emphasizes two things assumed to affect all things: first, the importance of connections in the becoming of all things, big and small. Paraphrasing Latour (1988), one might say that the network concept expresses the idea that anything can *potentially* be linked to anything else (while in practice, as well as analytically, it might not be). And second, the term highlights the continuous work it takes to sustain (or not sustain) connections. To emphasize that the suffix “work” is just as important as the prefix “net” in the ANT version of the term, Latour (2005) has suggested work-nets, although this formulation has gained little traction in social theory.



In approaches emerging under the banner *After ANT* (Law & Hassard 1999), the concept of “network” is deemed a troublesome analytic because it tracks too closely to more colloquially understood terms: for example, physical infrastructures such as “the internet” or terms like “networking” – the making of new social connections between people – or “social network”. Such terms seem to freeze the quality and/or content of connections. Within *After ANT*, the term refers rather to a situation where all connections are assumed to be becoming and transforming. Another problematic with the term is that it can be misread binarily (actor vs. network), so that one might seem able to focus *either* on the “nodes” or the “relations”. But for *ANT and After*, actor and network are two sides of the same coin. This has led to discussions about whether “rhizome” might be a better term than network because it also points to the (possible) winding proliferation of connections, without there necessarily being a center or centrifugal point (Jensen 2019). On the other hand, Czarniawska (2004) has developed the idea of *Action-Nets* to highlight that it is not necessarily actors, but rather actions, which are ethnographically recognizable as that which gets connected in nets across time and space.

In any case, to these thinkers, “network” is not a strong ontological term: a network does not have any specific form, capacity, or characteristics, except for a potential to grow or die as a kind of relational becoming. It is a weak, mostly empty, open-ended, but nevertheless consequential methodological term signifying that everything we identify as an actor, action, or entity could also be considered a gathering of sorts. Thus, one could say that what is immanent to the term itself is that it is always on the brink of becoming something other than itself. Hence, we cannot ignore those colloquial notions of the network that extend its use. In addition this points out the analysts’ responsibility in cutting the network: leaving out “stuff” within any analysis that might otherwise be related, as well as recognizing all those practical or worldly circumstances at work in making a particular network what it is. Thus, an account

of a network is also always to be considered as an effect, in itself a potential addition made from relating to a particular network, rather than a stand-alone representation.

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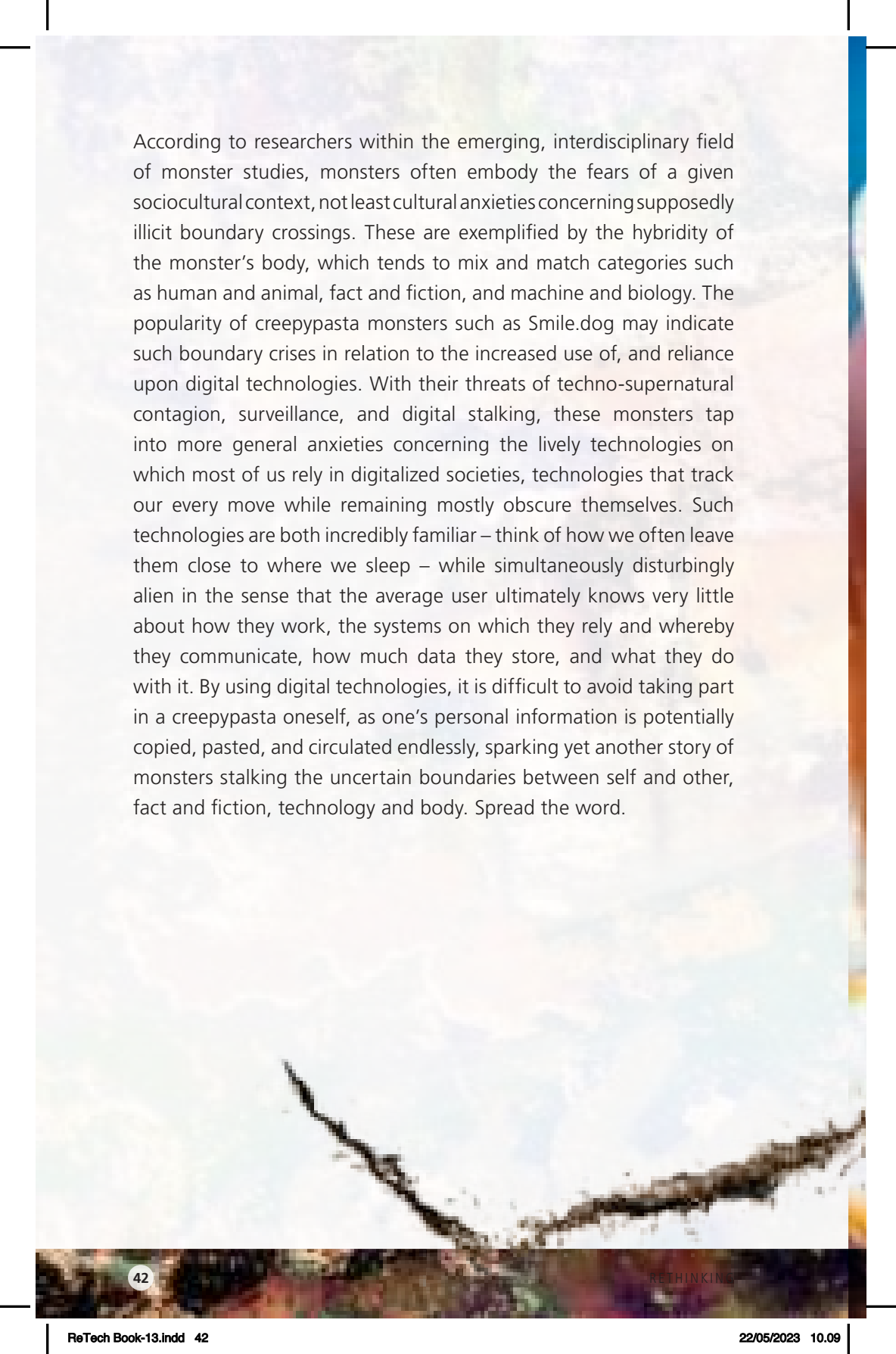
Smile.dog, drawing by Line Henriksen 2023

MONSTER

Line Henriksen

According to internet legend, a cursed JPEG-file called “smile.jpg” circulates online. If you find it – if someone sends it to you as an email attachment or as a link, perhaps telling you, “I’ve seen it, it’s not so bad, just spreading the word” – you will see a dog-like creature with a much too human grin. A pale hand reaches out from the darkness behind it as if to grab you and drag you into the image itself. At night, your dreams will be haunted by this creature, by Smile.dog. It tells you to “spread the word”, that is, to pass on the image file to someone else. Then, and only then, will Smile.dog leave you alone. So it promises.

The story about Smile.dog is an internet urban legend, often referred to as a “creepypasta”. The genre’s name derives from “coppypasta”, which is a reference to “copy” and “paste”. Whereas coppypasta can be any kind of copied and circulated material – from internet comments to messages on dating apps and questions on message boards – creepypasta aims to disturb. To that end, it typically moves within the realms of the Gothic genre, telling stories of creatures such as monsters, ghosts, and ghouls, as well as Gothic tropes such as possessions, hauntings, and curses. Often creepypastas connect the Gothic and the digital in ways suggestive of digital medias’ somewhat supernatural or otherwise otherworldly status. But why are digital technologies, the most recent in a long line of technologies intended for communication and information, apparently just as haunted as any graveyard and as filled with monsters as the spaces beneath our beds?



According to researchers within the emerging, interdisciplinary field of monster studies, monsters often embody the fears of a given sociocultural context, not least cultural anxieties concerning supposedly illicit boundary crossings. These are exemplified by the hybridity of the monster's body, which tends to mix and match categories such as human and animal, fact and fiction, and machine and biology. The popularity of creepypasta monsters such as Smile.dog may indicate such boundary crises in relation to the increased use of, and reliance upon digital technologies. With their threats of techno-supernatural contagion, surveillance, and digital stalking, these monsters tap into more general anxieties concerning the lively technologies on which most of us rely in digitalized societies, technologies that track our every move while remaining mostly obscure themselves. Such technologies are both incredibly familiar – think of how we often leave them close to where we sleep – while simultaneously disturbingly alien in the sense that the average user ultimately knows very little about how they work, the systems on which they rely and whereby they communicate, how much data they store, and what they do with it. By using digital technologies, it is difficult to avoid taking part in a creepypasta oneself, as one's personal information is potentially copied, pasted, and circulated endlessly, sparking yet another story of monsters stalking the uncertain boundaries between self and other, fact and fiction, technology and body. Spread the word.

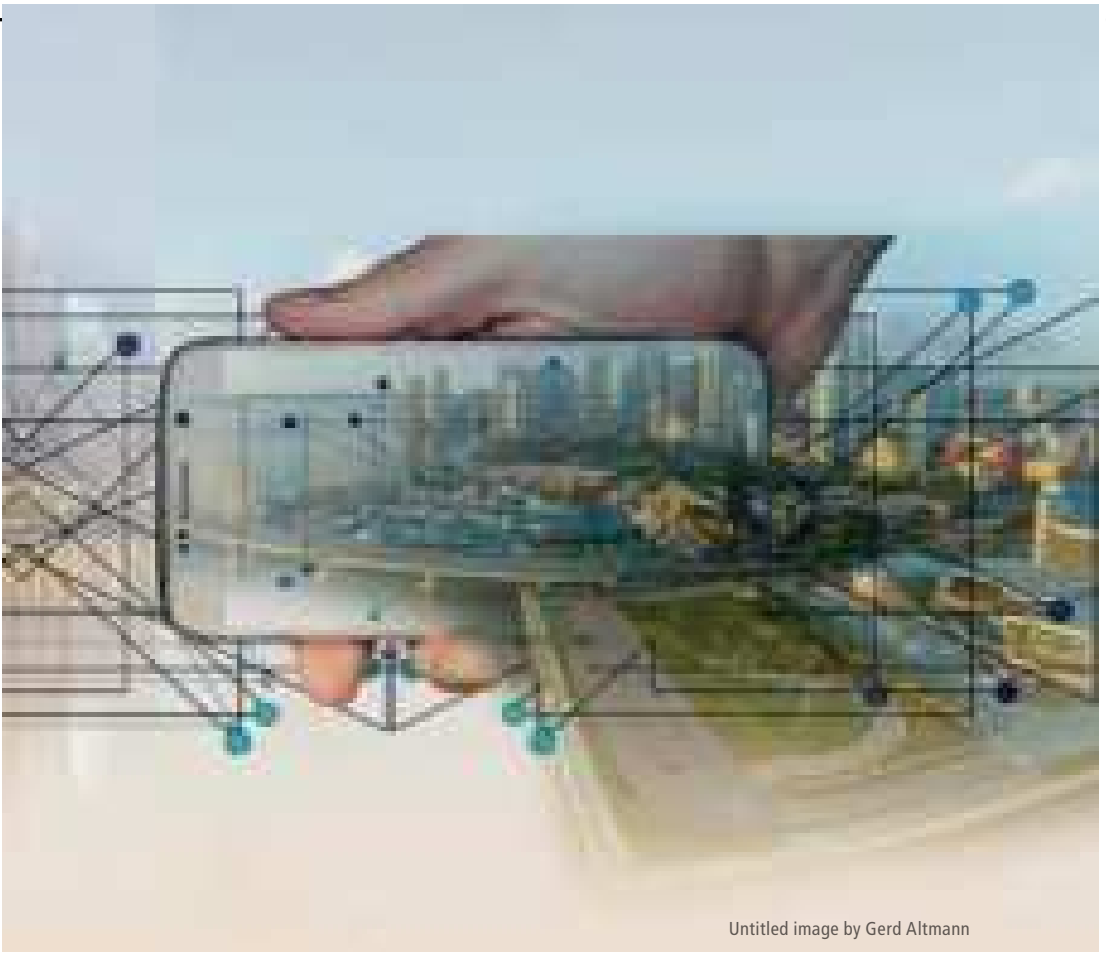




DIGITAL RESPONSIBILITY

Michael Hockenull

I define digital responsibility as “something more” than current attempts to protect personal data. In 2018, alongside the implementation of the EU General Data Protection Regulation (GDPR) the liberal-right wing government of Denmark convened a national Data Ethics Council, the culmination of years of work by advocates of the term “Data Ethics” (Hasselbach & Tranberg, 2016). This concept suggests that companies and organizations approach matters of data from a privacy-oriented perspective, one that focuses on the collection and retention of as little data as possible. The council approached



Untitled image by Gerd Altmann

data ethics from this perspective, one which marries well with the needs of industry. The outcome of the council's consultations was a charter on data ethics and a corporate ethics oath for data similar to the already existing Corporate Social Responsibility oath. Multiple articles, debates, and events were spawned around this initiative, some supportive and others voicing critique and concern. I use this concern as a gateway for suggesting an alternative concept: *Digital Responsibility*.

Digital responsibility is a way of paying attention not just to the soundness of the collection, use, and ownership of data, but to the broader dynamic digital ecosystem within which one operates. I draw here on Donna Haraway's notion of "response-ability" (Haraway 2008), to suggest an ethics which is able to respond with care and relate to a variety of different issues *collectively*. To this I add the importance of a long term perspective on data collection and use. Data is but one aspect of an extremely complex system of interlocking infrastructures, technologies, practices, and laws. The extent to which digital technologies infiltrate our lives and societies requires a more system-wide approach to ethics and responsible action. Scandals such as Cambridge Analytica's use of Facebook data, the Danish state's assistance in selling surveillance software to autocratic regimes, or the controversy surrounding Google's development of artificial Intelligence for the US military point to this systems-wide sense, where digital technologies and matters of ethics and responsibility intersect. In a sense this is no different to previous societal situations in that technologies have always engendered a host of ethical issues. Digital responsibility directs our focus to these broad social and political issues and avoids a narrow focus on individual privacy rights to data and corporate competitive advantage. As a society we must not work merely towards having better data ethics; we must set our aims higher, on digital responsibility. As researchers we have an obligation to diversify public discourse and draw attention to these issues. Currently, this means discussing what it would mean to have a truly digitally responsible society.

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SPECULATION

Caroline Salling

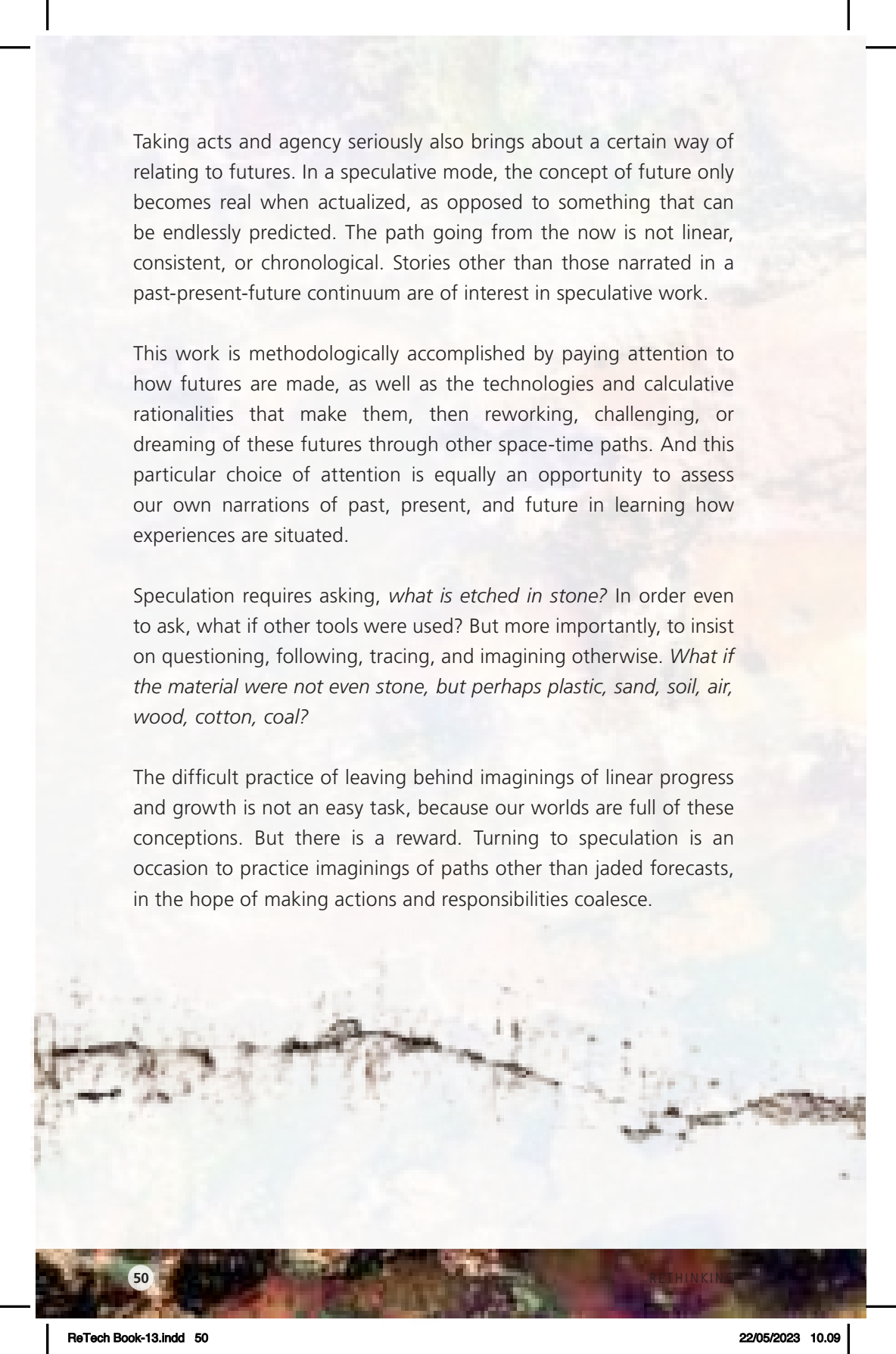
Crooked worlds require crooked methods. As a technique and approach speculation is concerned with accepting that explanation is not enough on its own, and that proof and evidence are not always sufficient when working on complex matters. Contemporary worldly troubles urge an engaged practice of articulating the unusual. Practicing this approach is to “stay with the trouble” (Haraway 2016) in order to foreground what is actually going on, beyond promises of modernist progress.

Such worldly troubles encompass a vast range of technological issues and speculations, as techniques are no less critical here than elsewhere. Whether optimizing or smartifying, the extensive privileging of technological solutionism requires new forms of thinking and method. As such, it is important not only to decode but also alternatively code, uncode, reclaim, and resist technologically solutionist worlds that are designed and marketized to benefit the few.

To Alfred N. Whitehead (1978 [1929]), speculation is a project of articulating a method that can produce important knowledge. Here, *importance* is a relevant cue. As Isabelle Stengers (2017) puts it, ethics is the center of speculation. It is concerned with the relation between the world and the way we act in the world, as well as the capacity to be responsible for actions and ideas that always have consequences. To speculate is to pay attention to these different paths, and the way that different actions can add extra force in the realization of such paths, by asking: How are these paths contested? What other paths are (being made) possible? How might x come to matter for y through action z? How might we/they, make sure z is accounted for?



Image 1 in speculation. Photo: Colourbox



Taking acts and agency seriously also brings about a certain way of relating to futures. In a speculative mode, the concept of future only becomes real when actualized, as opposed to something that can be endlessly predicted. The path going from the now is not linear, consistent, or chronological. Stories other than those narrated in a past-present-future continuum are of interest in speculative work.

This work is methodologically accomplished by paying attention to how futures are made, as well as the technologies and calculative rationalities that make them, then reworking, challenging, or dreaming of these futures through other space-time paths. And this particular choice of attention is equally an opportunity to assess our own narrations of past, present, and future in learning how experiences are situated.

Speculation requires asking, *what is etched in stone?* In order even to ask, what if other tools were used? But more importantly, to insist on questioning, following, tracing, and imagining otherwise. *What if the material were not even stone, but perhaps plastic, sand, soil, air, wood, cotton, coal?*

The difficult practice of leaving behind imaginings of linear progress and growth is not an easy task, because our worlds are full of these conceptions. But there is a reward. Turning to speculation is an occasion to practice imaginings of paths other than jaded forecasts, in the hope of making actions and responsibilities coalesce.

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BUREAUCRACY

Priscila Santos da Costa

Max Weber inaugurated a sustained interest in the study of bureaucracy when, in 1921, *Economy and Society* was posthumously published. Weber was interested in bureaucracies not only because they are one of many models of organization that have emerged throughout history, but because in modern, capitalist societies, they are the dominant form of governance and, therefore, of exerting power over others. The bureaucratic model of organization is a common denominator across a variety of public and private institutions, connecting the administration of universities and hospitals, for example, to that of private corporations and NGOs. Studying bureaucracies is therefore central to understanding the state and how society at large works.



Illustrated by C. San Roman

According to Weber (1978), six main characteristics define bureaucracies:

1. Bureaucracies are internally organized so that offices have clear functions and are hierarchically positioned in relation to one another;
2. This organizational hierarchy results in a system in which processes have to flow in determined ways and through the offices responsible for the activity in question;
3. Actions of bureaucracies should always be in accordance with written rules that constitute official documents;
4. Bureaucratic officials have specialized training;
5. Their job is a full-time function and they act in accordance with general rules and regulations, not guided by personal preferences or particular interest.
6. And, finally, career advancement is based on technical knowledge and decided by the organization to which the officer belongs – not by individuals.

As Hoag (2011) observes, bureaucracies are ambivalent; they represent themselves as efficient and objective, but common sense also associates them with opaqueness and, frequently, slowness. It is undeniable, however, that these organizational machines constitute a particular type of knowledge composed by a network of artifacts, practices, and social actors. And it is by looking into this matrix that the production and consequences of both “objectivity” and “opaqueness” can be explored.

Bureaucrats’ practices display a subtle interplay between individual and disinterested agency, whose final balance has to be perceived as attaining the latter if one is to avoid accusations of wrongdoing (Hull 2003). Documents, central bureaucratic artifacts, materialize institutions by fixing meanings and practices; their movement in and out of organizations establishes organizational boundaries and interrelationships (Hull 2012). And, against self-descriptions of neutrality, researchers have shown how the bureaucratic machine functions as perpetuator of the state’s structural violence and inequality (Gupta 2012; Farias 2014).

Processes of digitalization have not dimmed the power of bureaucracies (Muñoz 2018), although they have tended to change their configuration. Indeed, electronic databases, e-government, and other non-analogical practices of inscription and service transform not only the way in which citizens encounter institutions and officials, but also the social realities that are being managed by the bureaucratic apparatus. Studying bureaucracies in the digital age remains relevant not only for the novel social and infrastructure formations they make possible, but also for the way in which information technology adds complexity to the power dynamics of contemporary society (Eubanks 2018).

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Photo by Guido Jansen on Unsplash

ONTICS

Helen Verran

Even if you have become comfortable with the words epistemic, epistemological, and ontological, and now feel confident using them in sentences, it still may be that meeting the term “ontic” lurking in a lexicon, a set of concepts associated with technologies deployed in practices, will unnerve you. If in our vocabulary we already have “epistemic”, meaning associated with knowledge doing and making; “epistemological”, which refers to how we can be certain enough about what we know; and “ontological” which names what it is we know, the configured known, is there any need for more of these knowledge-doing words? Why would we require “ontic”? Surely this knowledge-words business is getting just too arcane!

Ontological troubles sometimes swirl around our knowns *in situ*, and to apprehend and stay with that trouble is to do ontics; and to do ontics in going on as a collective, in staying with tensions and troubles, requires us to be explicit about this aspect of our epistemic work. We can start by cultivating familiarity with ontic experience of the here and now, wordless experiencing, albeit within a particular language world. Expressing that experiencing in story necessarily gives a partial account of the experience; wording is (re)experiencing experience. Long ago I learned from some helpful Nigerian children, bilingual in Yorba and English, that ontics are not only knowingly habitable, but also that one’s navigation in the puzzling elicited by experiencing it, happens within the relations that become structured in particular languages, albeit wordlessly. And further, that such navigation might be spoken of.

Here is one place I have found I cannot do without the concept of ontics. Landscape fires are used as a technology in land management practices in many places in Australia. In some of these places scientists and Aboriginal landowners work together to make landscape fires (Verran 2002). Environmental scientists conceptualize such a technological fire as “a prescribed burn”, Yolngu Aboriginal Australian landowners conceptualize it quite differently and call it “*worrk*”. A profound epistemological and ontological gulf separates the different knowledge practices. Yet it is possible for these two groups, who can barely understand each other, to cooperate on the ground; they often “do” a single fire together. In the course of this work each group carefully constructs the required epistemic micro-world as they conceive of it, and justify lighting a landscape fire. All those present at a firing event experience a fire that is simultaneously conceptually singular, albeit vague – a landscape fire, and conceptually multiple – a “prescribed burn”, and a “*work*”. The fire that they do is collectively experienced in a domain of inferential knowing that is aconceptual; this domain is where ontics is done¹).

Recognizing ontics involves accepting that entities have strategies of existence. A particular landscape fire has strategies by which it does its own existence, and for humans to know about and thus collectively manage a fire, we need ontology, and as often happens in Australia, two very different ontologies are on hand. When explicit recognition of such epistemic difference is required if we are to go on together and avoid perpetration of epistemic injustice, juxtaposed ontologies are not enough. As soon as we venture away from the comfort zone of an epistemic collective where knowers share an ontology, where it is likely that other epistemicities (teleologies, axiologies, and epistemologies) differ too, then as researchers, we need to learn to inhabit, navigate, and negotiate ontics. In doing this we might cultivate a respectful dissensual epistemics.

¹ <http://www.issuesmagazine.com.au/article/issue-march-2008/science-and-dreaming.html>

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BORDER

Vasilis Vlassis

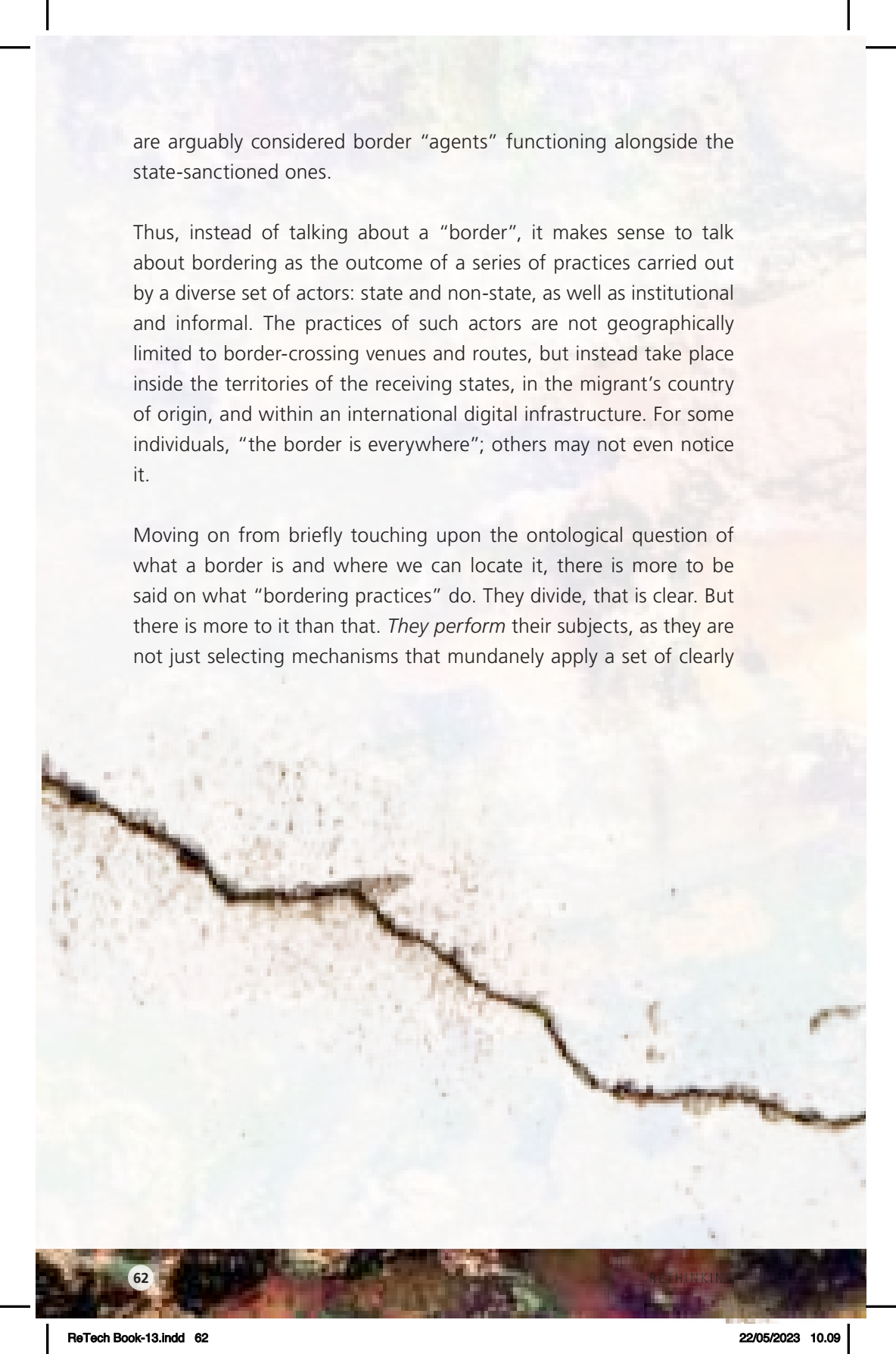
The cogito ergo sum of a border would arguably be “I divide therefore I am”. Every other claim about what a border does can be disputed, found to be partial, inaccurate, or outdated, but there is no border that does not divide one thing from something else. Ever since borders first became a particular technology of making nation states as we know them, things have changed: the methods in use, the agents at play, the subject groups that are divided have been in a constant flux.



A wide set of technologies ranging from landmines and patrol ships, satellite surveillance systems, and heart beat detectors, to biometric databases and, of course, passports and stamps, have arguably detached the notion of the border from the idea of “a line in the sand”. In addition, NGOs now play a significant role in the management of refugee camps, management companies provide “solutions” in the logistics of migration management, and tech companies continue to develop new apparatuses of control and surveillance and, thus,



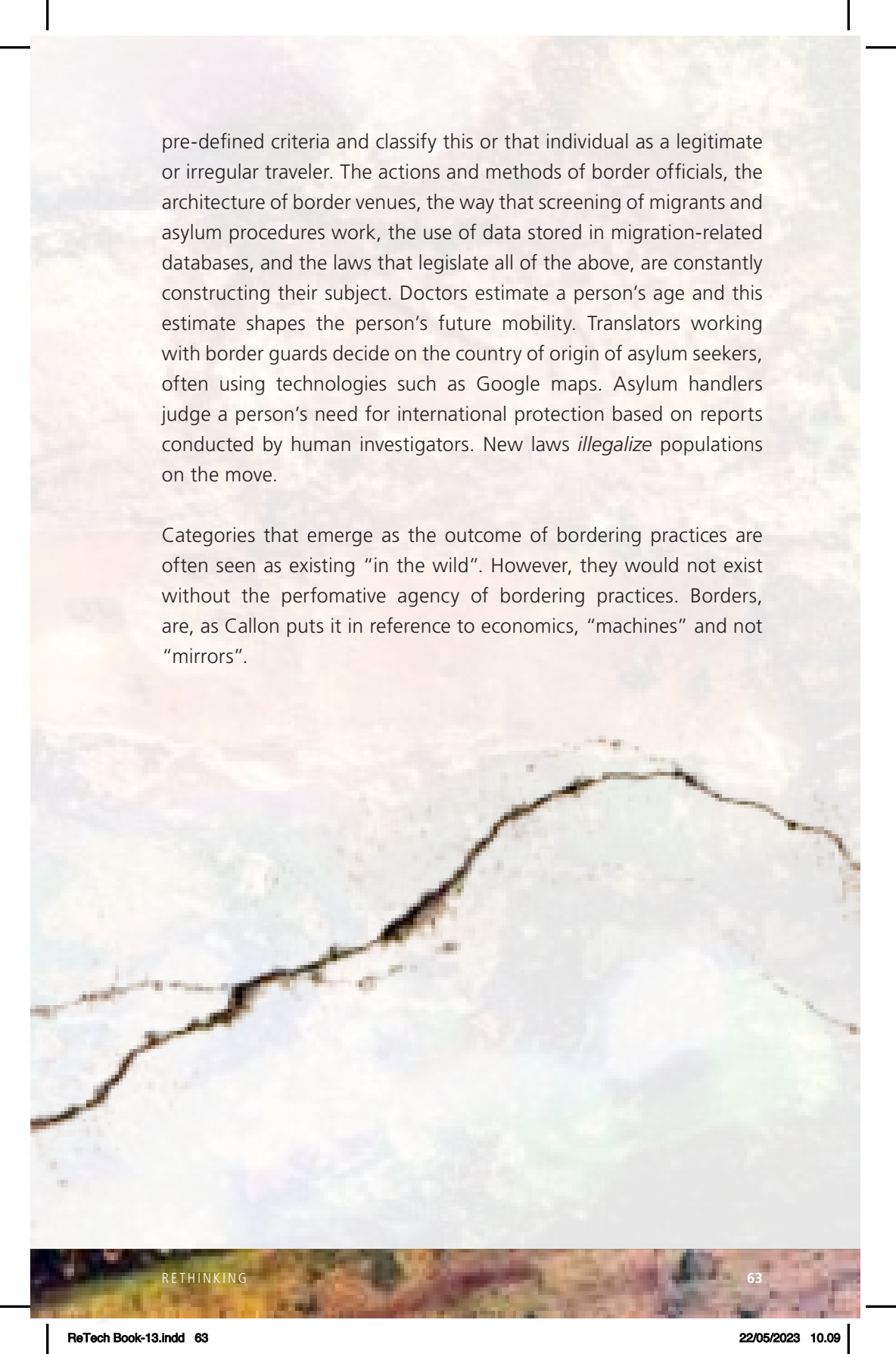
Photo: Max Böhme on Unsplash

An aerial photograph showing a winding, dark-colored path, likely a road or a river, cutting through a light-colored, textured landscape. The path starts from the left side and curves towards the bottom right. The background is a mix of light beige and pale blue tones, suggesting a natural or urban environment.

are arguably considered border “agents” functioning alongside the state-sanctioned ones.

Thus, instead of talking about a “border”, it makes sense to talk about bordering as the outcome of a series of practices carried out by a diverse set of actors: state and non-state, as well as institutional and informal. The practices of such actors are not geographically limited to border-crossing venues and routes, but instead take place inside the territories of the receiving states, in the migrant’s country of origin, and within an international digital infrastructure. For some individuals, “the border is everywhere”; others may not even notice it.

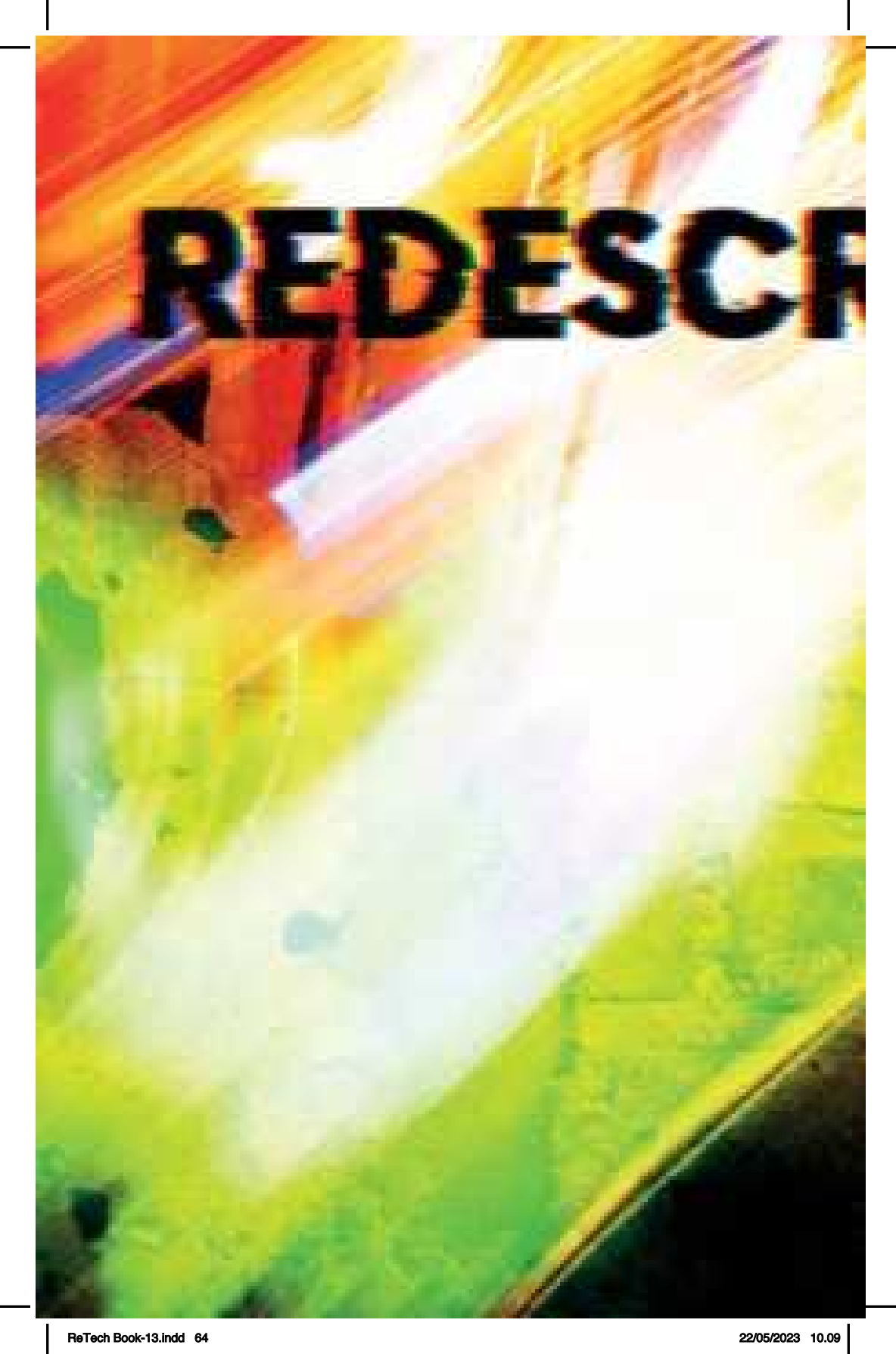
Moving on from briefly touching upon the ontological question of what a border is and where we can locate it, there is more to be said on what “bordering practices” do. They divide, that is clear. But there is more to it than that. *They perform* their subjects, as they are not just selecting mechanisms that mundanely apply a set of clearly



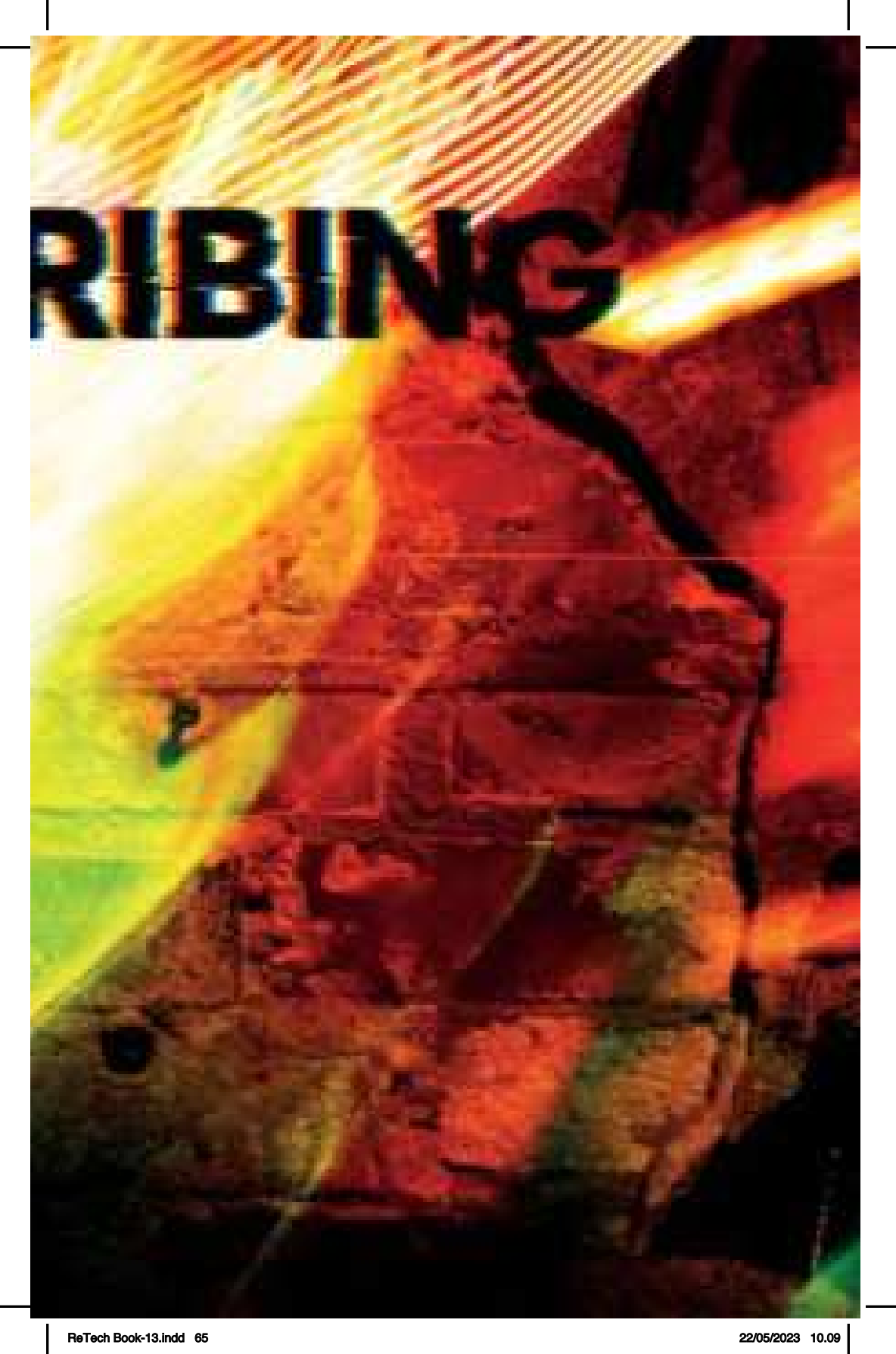
pre-defined criteria and classify this or that individual as a legitimate or irregular traveler. The actions and methods of border officials, the architecture of border venues, the way that screening of migrants and asylum procedures work, the use of data stored in migration-related databases, and the laws that legislate all of the above, are constantly constructing their subject. Doctors estimate a person's age and this estimate shapes the person's future mobility. Translators working with border guards decide on the country of origin of asylum seekers, often using technologies such as Google maps. Asylum handlers judge a person's need for international protection based on reports conducted by human investigators. New laws *illegalize* populations on the move.

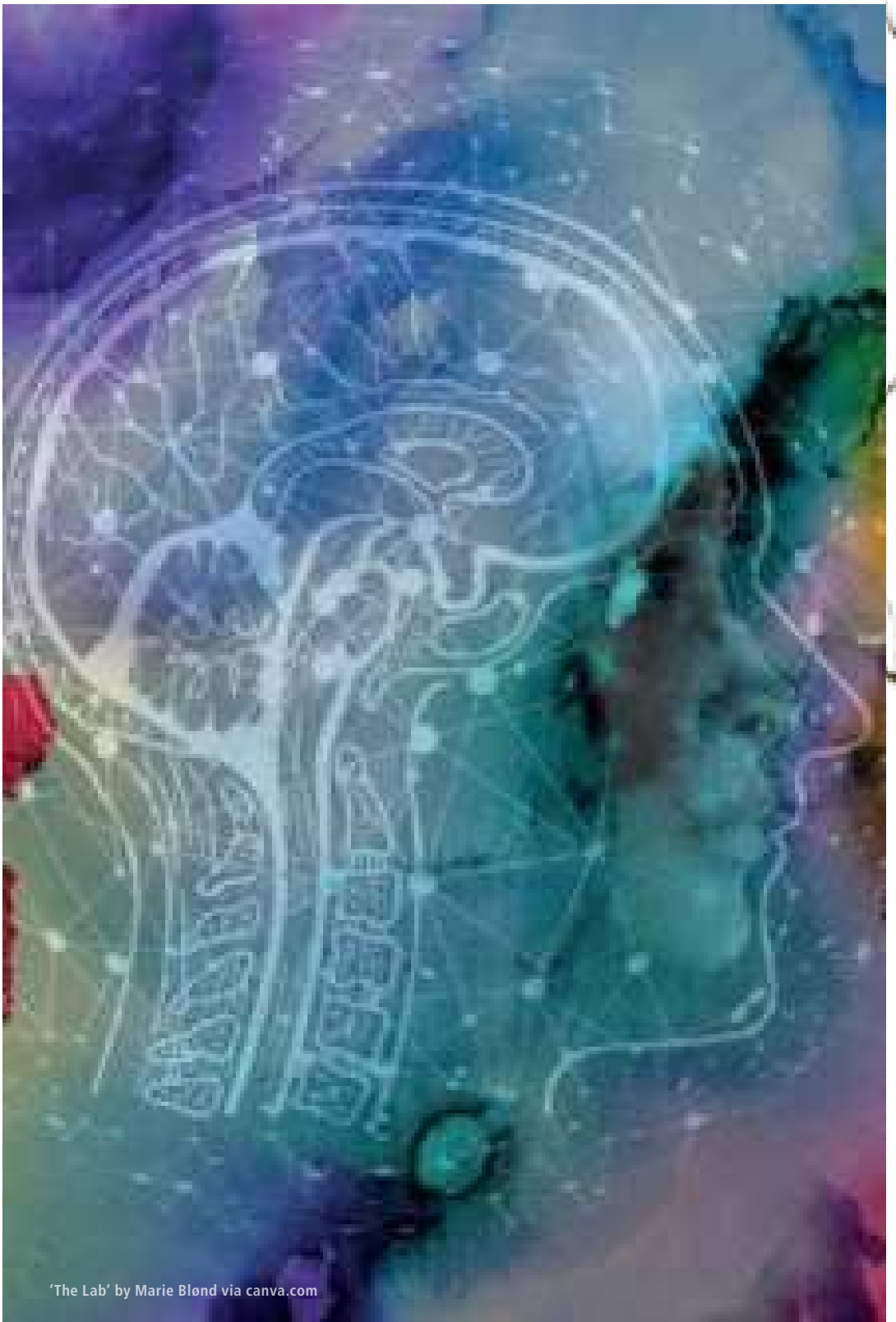
Categories that emerge as the outcome of bordering practices are often seen as existing "in the wild". However, they would not exist without the performative agency of bordering practices. Borders, are, as Callon puts it in reference to economics, "machines" and not "mirrors".

REDESCR



RIBING





'The Lab' by Marie Blønd via canva.com

LAB

Marie Blønd

The Laboratory,
Originally considered a confined space for testing hypotheses,
'making evidence'
For the lonely scientist to "remove" or distance himself from the
experiment
Repeating experiments through trials of strength¹⁾ to become 'matters
of fact'²⁾

Puncturing the sterile lab environment
Experimentation evolves with methodological mutations
To understand sociomaterial worlds

Interventions and implosions
Attract knowledge nurtured in other disciplines
Inviting fellows and collaborators from other world-makings

¹⁾ Sismondo, S. (2010). *An Introduction to Science and Technology Studies*. Oxford: Blackwell, (second edition). *The Prehistory of Science and Technology Studies* (chapter 1), pp. 1-11.

²⁾ Latour, B. (2004). *Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern*. *Critical Inquiry*, 2 (30), 225-248.

Seeking new lab tools and blackboxes to unpack
Speculating through feminist cartographies
Creating meaning with newfound language
With vibrations from curious and talented student explorations
Softening institutional hierarchies adhering to metric driven practices
Performative experimentation in practice
A transformation
Diffraction³⁾

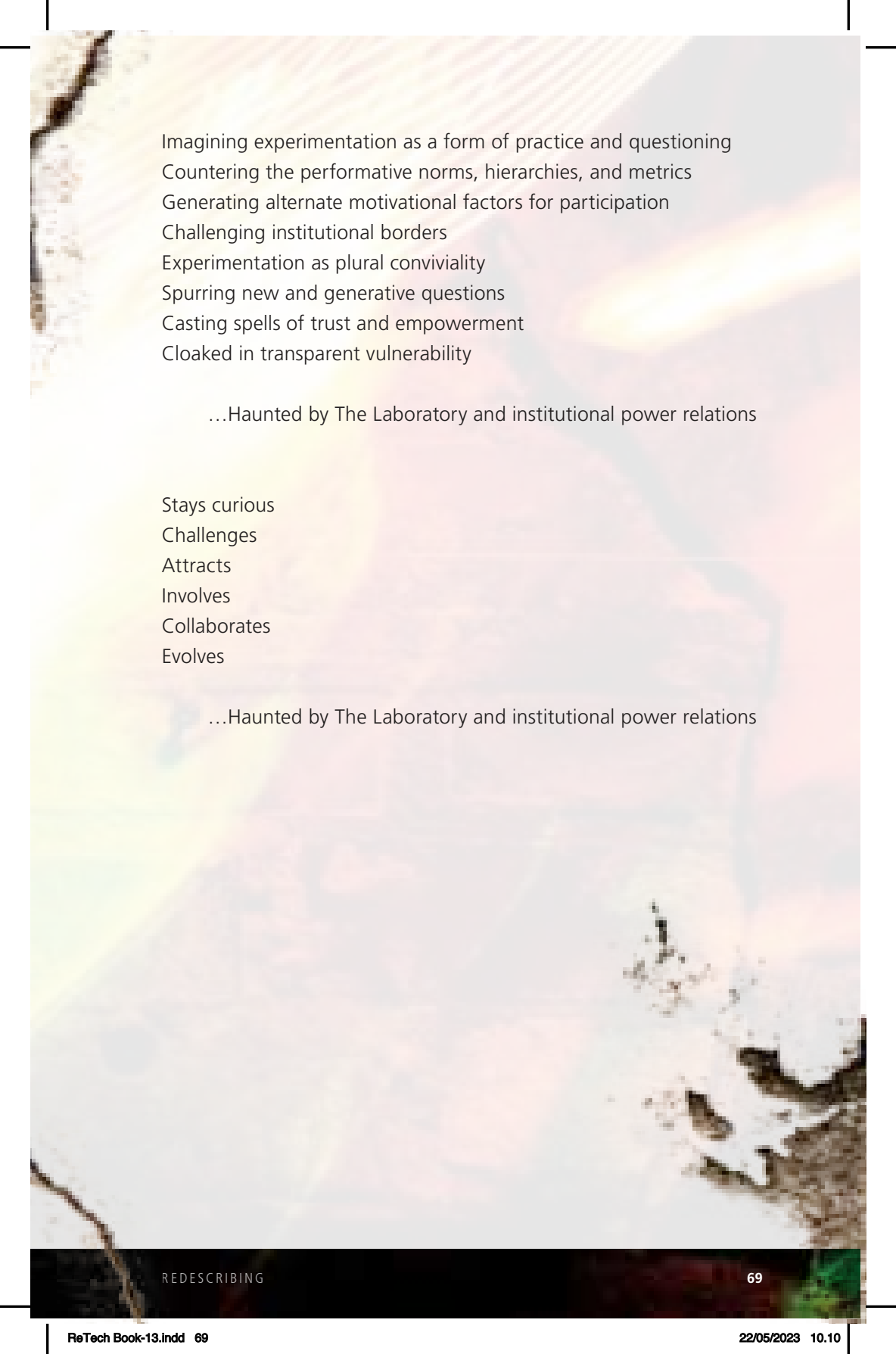
A Lab, re-configured⁴⁾,
She hosts 'matters of concern'⁵⁾
Experiments with co-created epistemological expressions
Ingredients considered socio-techno-material and located
Toolkits overflowing with past-present-future
Mixing people - culture - disciplines - genders - histories
Maintaining and nourishing through Mentorship and Care
Distributing ownership in an egalitarian community of mutual respect

...Haunted by The Laboratory and institutional power relations

³⁾ Haraway, D. (1997) Modest_Witness@Second_Millennium. FemaleMan®_Meets_OncoMouse™: Feminism and Technoscience. New York: Routledge.

⁴⁾ Haraway, D. (1988) Situated Knowledges: The Science Question In Feminism and the Privilege of Partial Perspectives. Feminist Studies, 14 (3), 575–599.

⁵⁾ Latour, B. (2004). Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern. Critical Inquiry, 2 (30), 225-248.



Imagining experimentation as a form of practice and questioning
Countering the performative norms, hierarchies, and metrics
Generating alternate motivational factors for participation
Challenging institutional borders
Experimentation as plural conviviality
Spurring new and generative questions
Casting spells of trust and empowerment
Cloaked in transparent vulnerability

...Haunted by The Laboratory and institutional power relations

Stays curious
Challenges
Attracts
Involves
Collaborates
Evolves


...Haunted by The Laboratory and institutional power relations



DATA

Geoffrey C. Bowker

Burning of Library at Alexandria, Hermann Goll, 1876. Wikipedia Commons

A painting of a harbor at night. On the left, a large fire burns brightly, illuminating the scene. In the foreground, a dark boat is visible. The background shows a cityscape with buildings and a large structure with a dome. The overall mood is dramatic and somber.

"numbers beat no numbers every time"
(John King, personal communication)

"... peremptory quantification risks begging all the big questions"
(Neer & Kurke, 2020, 4)

In the millennium between about 2500BCE and 1500BCE, a persistent question in China for confucians, Taoists, and legalists was how to interpret the meta-division between the original undivided and the world which we could only apprehend through divisions or names. Did action flow from being attuned to the One directly or through marshalling the many in resonance with the One? (Cheng 1997, esp. Chs. 6-8). Over the past few hundred years in the West – broadly conceived to include every direction, really – we have been moths circling the bright flame of division of the world into named entities we can collect data about.

Before we decide on any course of action, we need to dissect, enumerate, and manipulate ever finer divisions of reality. The great censuses of the late 18th and early 19th centuries, both of the natural and the human world, proposed a (particular) hubris of particulars: if we can measure, count, quantify, we can build a statistical state of society and of nature which conforms to our Way (Tao). Data, that which is given about us, will be analyzed and will (re)turn us to the good ordering of society and nature. An n-tuple vision both vain and virtuous, noble and nefarious.

I shocked myself the other day. I was giving a talk about citizen science projects in the realm of biodiversity. Many of these were counting projects – how many bumblebees, birds, koalas, and insects are there in the world? – And should we be duly panicked that there are fewer than before?¹⁾ And I came out and said what I had been thinking for many years – counting, databasing, analyzing are not the answers to any questions I can think of in this domain.

¹⁾ See for example <https://www.zooniverse.org/>, which claims nearly 600 million classifications among all its counting projects. See for example <https://www.bumblebeewatch.org/> or <https://fundis.org/resources/blog/115-a-four-tiered-model-for-crowdsourcing-fungal-biodiversity-citizen-science>.

Step one (as if I were counting) is to recognize that the species concept is silly to begin with – we are all ineluctably symbioses of many “beings” and species shade one into the other; it is more interesting to consider nature as One. Step two (I wish I would stop counting) is to recognize that producing a catalog of the library of nature while it was burning down was never a solution;²⁾ the issues lie in our behavior (our Way), not in enumeration. It is just that I said all this to the wrong audience, to people who gained solace and purpose through adding to the great database of Life.

From about 70BCE, a persistent question in the West for computer scientists, talliers, and legislators concerns the difference a distinction makes. We now have classification systems beyond our ken: machine-learning algorithms can process us into databits which act sufficiently like those of our unapprehended peers that we can be readily manipulated. Data (that which is given) are both gift and poison. Through databasing the world we do understand ourselves and the world better; the downside is that in exactly the same motion we reify both – freezing them in the eternal sunshine of an error-free code which makes division ever more fine-grained, ever more necessary. We become that which our data tells us we are.

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²⁾ For the burning library metaphor in taxanomics, see <http://ailman.nhm.ku.edu/pipermail/taxacom/2002-August/thread.html#41466>.

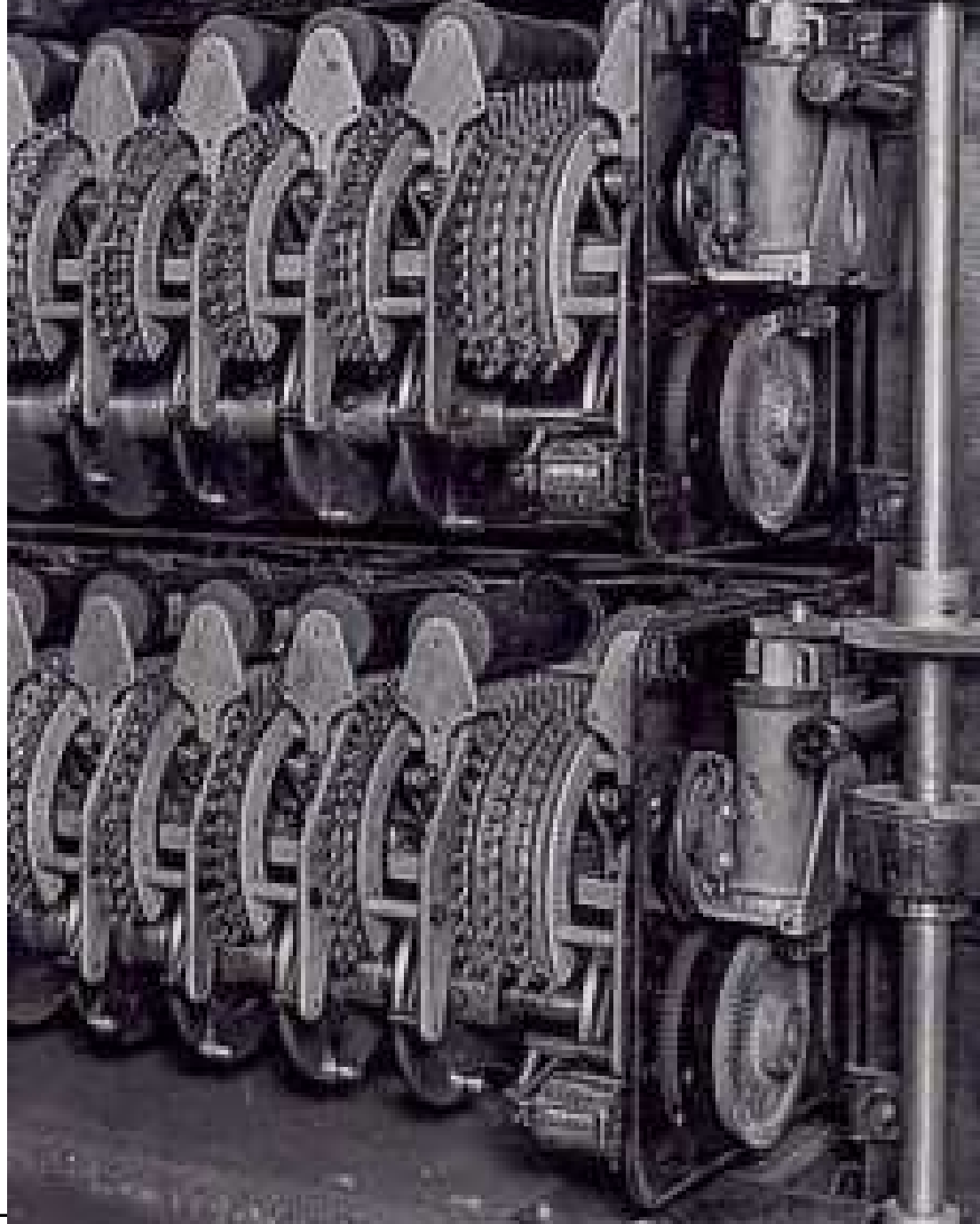


STATE

Baki Cakici

'Difference Engine Number 2' by Carsten Ulrich

55 - 60
49 - 54



Some definitions of state, stated in no particular order:

State is a material property, as in states of matter, and it is a polity, as evoked by matters of state.

In both denoting the configuration of elements understood to be similar;

atoms distal and proximal for natural sciences,

subjects higher or lower in political hierarchies.

In computer science state can define a machine—a state machine—as an abstraction,

with nodes and edges in fusion.


Digitalization, meanwhile, produces for all of us a function,

machine and subject in perfect union.

Not all definitions end in abstraction;

“state of mind” invites introspection,

“state of being” grounds us in the current duration.



It is in 'the state' that structure returns: Methods of counting in the conduct of statistics also legitimize themselves with reference to the state, and state practices, such as the population census, in turn become the means for legitimizing the authority of the state. The theory of governmentality depicts counting as a method for rendering society governable by the state, but the state remains an accomplishment that must be continually performed. While borders are upheld by force of arms, the survival of the state is dependent on everyday performances by its subjects; bureaucrats guarantee that the flow of requests and responses never cease, and residents interact with infrastructures to eat and to breathe.

While all definitions are invitations for reflection – linking writing to interpretation – in the journey from abstract mathematics to a monopoly on violence, the term state reveals connections with overwhelming density. And when the paths converge in one conclusion, the statement floats as a reference for others to follow in its wake; properties and polities, configurations and qualifiers, censuses and borders give way to cascading entries as the present slips away and attention wanders.



OIL

Andy Lautrup

Oil makes futures and oil breaks futures.

The future is linked to our capacity for imagining, for setting trajectories in motion. Unless we actively work against it, the status quo tends to reproduce itself – in our imagination as well as our actions. When we pluralize future(s), the forces that go into shaping particular versions become more apparent. Daring to speculate on a future beyond oil is the start of making things otherwise.

Oil makes futures through extraction: laden with jobs, prosperity, and enormous capital. But also ideas and ideals. Maybe we could call it the infrastructural undertone of the current world system. The sound of oil moving through a pipeline, the spinning motor of a sleek convertible. Imagine: the greasy humming!

But futures are also broken through extraction: accidents, dangerous working conditions, displacements of people, the appropriation and use of landscapes as resource colonies. Oil extraction changes these landscapes, changes the lives lived in them by humans and non-humans. The brutal aesthetic of the drilling rig, the oil platform, the refinery.

The future, not one possible version among many, but as the condition of possibility for our existence, is now placed in jeopardy by the burning of oil, as emissions of carbon heat the planet. There is more available oil to burn than the earth can endure. Melting ice and rising seas. A separation in time and space between carbon emissions and the violence their accumulation causes. Yet another way of privileging white lives over lives that are not white. A fear that there is no livable future. The situation inspires names: Climate angst. Climate anger. Climate grief. Climate refugees.

Oil is the future version of a geological past. Sediments, rock, and stone. Compression. Immense amounts of time. But oil is more than a material substance. Its energy shapes society, its desires, its values, its hopes and beliefs (Petrocultures Research Group, 2016; Szeman & Boyer, 2017; see e.g. Wilson et al., 2017). Think about: individualism, mobility, consumption, growth. Think about: highways, cars, and airplanes. And think about: the plastics that fill our commodities, our lives, our oceans, our bodies, our atmospheres.

Living beyond oil requires urgent modes of speculation. Not only for the sake of imagining alternate futures, but as a mode of retaining a *future*. Such speculation begins with the premise that living beyond oil is more than a question of new technology and, as such, exceeds the modification of energy infrastructures and the implementation of renewable energy scenarios. Technological fixes work to sustain the status quo and displace questions about how to live well together. As well as the complex value reorderings that come with such questions (see for example Günel, 2019). Living beyond, therefore, implies not just dwelling in the aftermath of particular energy technologies, but moving the horizons of our imaginative and speculative capacities in order to retain liveable worlds (Lautrup, 2022).

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MACHINE LEARNING

Adrian Mackenzie

In flight, en route to Copenhagen, I find myself staring, transported, at a line of maths, an expression of a basic model in machine learning. It is a polished proposition (Latour 2004), a way of putting forward the kernel of what machine learning does when it classifies. Carefully, I inscribe the expression on a paper napkin that came with the in-flight refreshment.

Do I think tracing it onto a napkin puts it into the world more than the many copies printed in PDFs, textbooks, websites and online videos? Or that it puts it in me? Do I mobilise it by drawing it?

In scope, the expression matches Donna Haraway's marvelous integral equation for a post-hummus life in Terrapolis, a speculative "fictional n-dimensional niche-space for multispecies becoming with" (2016, 10-11). In isolation, the proposition, refractory and opaque as it may seem, is a strange mixture of vast emptiness – the long distances the flight covers without my noticing – and the densely woven differences, forces, relations, practices, and associations of the crowded cabin. There is so much compacted and implicit in this expression, the archetypal classifier known as logistic regression. It compresses so much in its indices, its X and x-es, and the elementary operations of adding and dividing. It runs through machine learning, from Facebook to self-driving cars, from biomedical statistics to Tiktok, from recommendation engines to border security, classifying wherever it goes.

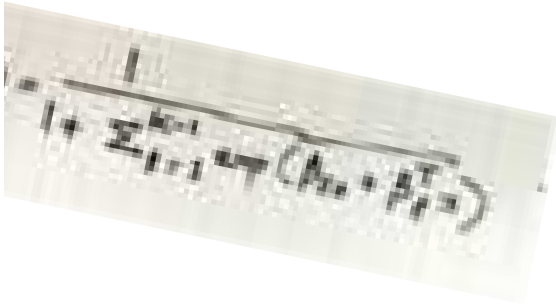


Image of handwritten machine learning function by Adrian Mackenzie

The proposition says something like: things in the world can be sorted into K classes, perhaps even just two classes, like the passengers sitting fore and aft on this flight, or people who live and people who die. The degree of belief (a.k.a probability) that a thing, a passenger, sits in a particular class depends on all the data relating to that thing, x . The dependency can be written as a fraction: one over the sum of values of data, a sum weighted by the unobtrusive parameters β . The values of β are the object of extensive tuning during the “learning” or “training” phases of machine learning. They are control surfaces. Their alignment and position channels movement through the model.

Sunlight floods through the window as the take-off clears the low cloud over Manchester. From up high, the traffic beetling on the motorways, the rivers and wooded streams, sheep stood in marshy fields, the warehouses and distribution centres clustering near motorway exits, shopping malls and leisure complexes on urban peripheries, and the winding rows of houses, spread out like an actor-network quilt.

Is the equation a landscape painting, a view from on high? Is it a flight path, a trail of condensed vapour? Machine learning keeps opening up new destinations, like a low-cost airline that crams millions of passengers on flights to a thousand hitherto far-flung resorts. Or is it, as William James (1935) might see it, a form of experience like the security lanes at Terminal 1 Manchester Airport, a path trodden by millions, including people like me, carried along by their susceptibilities to the dazzle of a takeoff. We wind through it, subscripted, superscripted, and supervised, passing through gates such as the 'bias' β_0 , feeling the weights of the model parameters $\hat{\beta}$, pulled apart by the exponential function, and lined up again by the summing operator σ , the operator whose nod says, "Yes, go through", or "No, stand here." Is it a full body scanner in which we stand with arms raised (Benjamin 2019; Amoores 2020)?

The stark simplicity of the expression still dazzles me almost as much as it did in 2014 (Mackenzie 2017), but there is no flight without the queues, scans and controls, logistics and marketing, all the costs and losses of movement. If I am transported by a technique, dazzled by it, how do I move? The dazzle of technicalities rarely benefits understandings of technical practice, except perhaps in this one respect: we need to be somehow transported for there to be experience of them. "It is only by risking our persons from one hour to another that we live at all", writes James in his movement-based account of experience (1956, 34). I carried the napkin around for a long time after the flight. I see the expression now not so much as a full body scanner or a landscape viewed from far above but as something to be traced out, copied, followed up, even carried away on a paper napkin, after the flight has ended.

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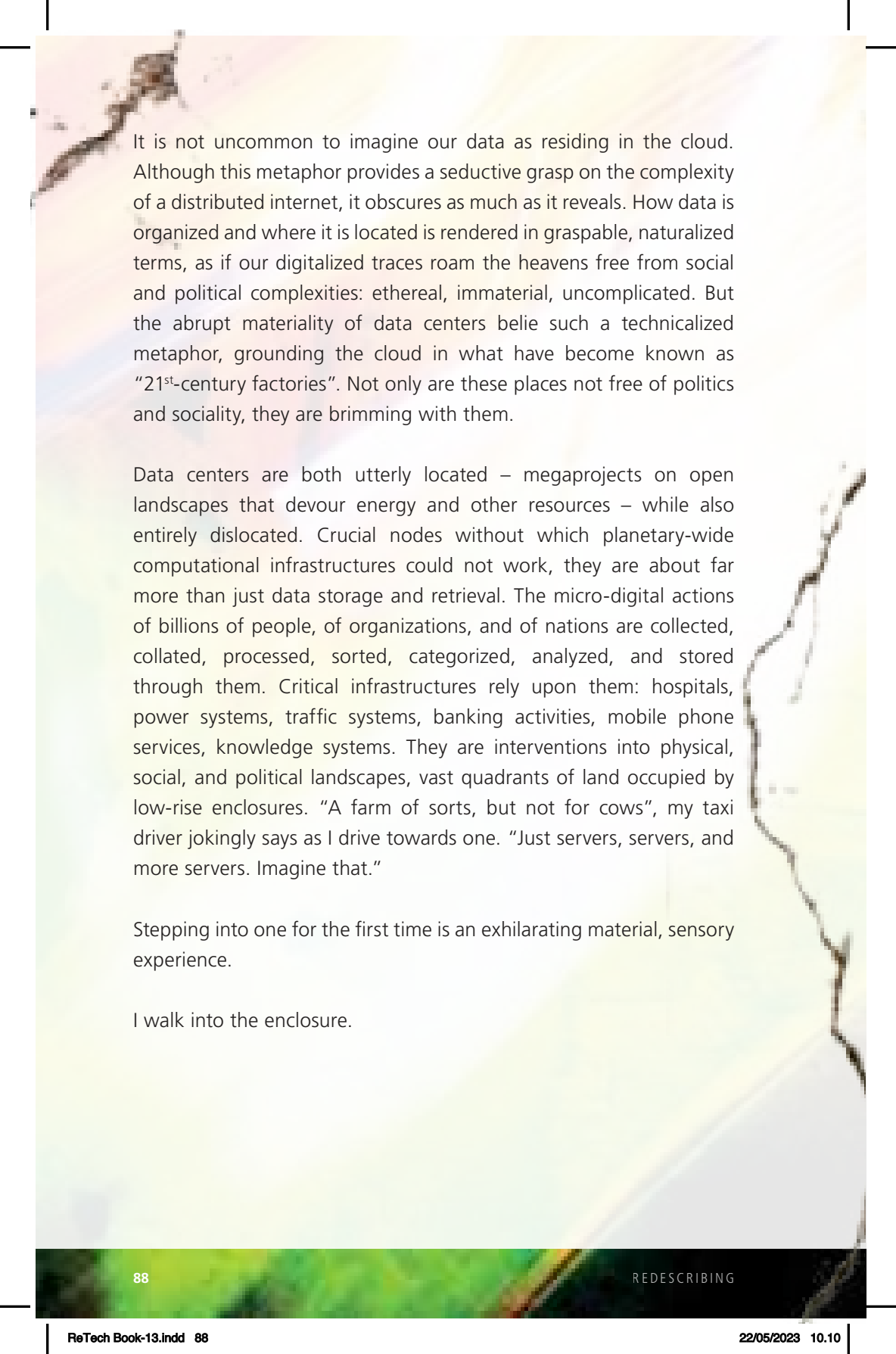


Hard disk and minerals. Installation detail from Cloud Computing by Jacob Remin (2016)

DATACENTERS

James Maguire





It is not uncommon to imagine our data as residing in the cloud. Although this metaphor provides a seductive grasp on the complexity of a distributed internet, it obscures as much as it reveals. How data is organized and where it is located is rendered in graspable, naturalized terms, as if our digitalized traces roam the heavens free from social and political complexities: ethereal, immaterial, uncomplicated. But the abrupt materiality of data centers belie such a technicalized metaphor, grounding the cloud in what have become known as “21st-century factories”. Not only are these places not free of politics and sociality, they are brimming with them.

Data centers are both utterly located – megaprojects on open landscapes that devour energy and other resources – while also entirely dislocated. Crucial nodes without which planetary-wide computational infrastructures could not work, they are about far more than just data storage and retrieval. The micro-digital actions of billions of people, of organizations, and of nations are collected, collated, processed, sorted, categorized, analyzed, and stored through them. Critical infrastructures rely upon them: hospitals, power systems, traffic systems, banking activities, mobile phone services, knowledge systems. They are interventions into physical, social, and political landscapes, vast quadrants of land occupied by low-rise enclosures. “A farm of sorts, but not for cows”, my taxi driver jokingly says as I drive towards one. “Just servers, servers, and more servers. Imagine that.”

Stepping into one for the first time is an exhilarating material, sensory experience.

I walk into the enclosure.

Blinking. A luminous atmospherics of flashing lights in manifold colours, signalling the reception of photons refracting through fiber optic cables in billions per second beats.

Humming. An acoustics of alternating current buzzing through the endless racks of server stacks piled tightly, one against another, one over another.

Whooshing. A soundscape of air cooling within ventilators, pulsating through corridors, relieving the infernal heat of silicon servers.

Silencing. All the while invisible, noiseless AI, analyzing, calculating, and controlling, unnoticed in the background. Ones and zeros, light and optics, current and heat, air flow and cooling, machine intelligence. And us, devices in hand, somewhere: searching, posting, sharing, commenting.

As our activities accelerate, data accumulates, and storage necessitates data centers. But data only lives in centers with particular conditions of possibility. Thermal loops of heating, over-heating, and cooling preserve data's silicon form within more temperate bandwidths. The thermopolitics of energy, the cryopolitics of preservation, the material politics of land, the knowledge politics of labor, all have to be arranged, just so. None are ethereal, immaterial, uncomplicated, like the clouds of engineering fantasies. All are dense, foreboding, portentous, like the clouds of intemperate realities.



MOVEMENT

Vasiliki Makrygianni

The “new mobilities” paradigm outlined by Sheller and Urry (2006) brought movement to the epicenter of the social sciences. The mobility turn was marked by research revolving around the interdependent movements of people, information, images, and objects. In this regard, to define movement in a network society is to investigate the circulation of people, information, and knowledge in digital and analog space.



Movement allows data flows and data transmissions that determine our everyday lives, our choices, our relations, our habits. The recent strategies and regulations on data movement in the EU reveal a site of conflict in the online world. The Free Movement of Data in



the Digital Single Market, called the fifth freedom, complements the existing freedoms on movement of goods, services, capital, and people. Meanwhile, the Directive on Copyright and its most provoking component, Article 13, requires online platforms to filter or remove copyrighted material from their websites. Thus, in digital space, movement is very often enabled or restricted according to flows of capital.

However, movement is also the means of developing alternatives in order to question institutional and governance practices. Social movements imply agency and entail collective actions that derive from encounters and conflicts. It is these social movements that urge

resistance. Such movements incite conflicts, initiate debates, and thrive in the digital space where, according to Harry Cleaver (1995), the “electronic fabric of struggle” emerges.

Movement is about going beyond borders, demarcation lines, limits, and boundaries. It is about questioning the technologies of surveillance and policing. Millions of people move around the globe annually. These mobile populations cross borders and settle down, only to start moving again. For those expelled from the West, movement entails a lethal danger and thus becomes a powerful management tool.

And when humans seek to enhance transportation, commodity distribution, and data transmission, movement becomes a matter of technology. With trains, cars, airplanes, boats, wheels, prosthetic legs, space crafts, and airplanes, we move. Through cables and waves, antennas and satellites, our data move. But, apart from feet, wheels, turbines, high speed cables, electromagnetic fields, and gravitational forces, ultimately, our standpoints and our e-motions are what motivate us to move on.

Movement is practiced, experienced, and embodied at different scales and in different spaces. Even when we stand still our bodies move: digestion, blood flow, neurotransmitters, our endless heartbeats that operate in hard beats, our e-heartbeats that exist in bytes and bits. Avenues, boulevards, roads, bike lanes, bridges, and paths serve movement. Circulation in cities is the grounding precondition for sustaining urban life. Imposing control and order over city streets implies power over the city itself. In our everyday lives, movements define trajectories, allow transitions. Their primal spaces of reference are analog and digital thresholds.

As Cresswell (2006) and Salazar and Smart (2011) point out, movement and mobility are nowadays the rule rather than the exception. And while research in this field is thriving, the challenge now for researchers and scientists is not only to understand and define movement but to enable these passages and thresholds (whether in analog or digital space) that allow the circulation of humans, the sharing of knowledge and the spreading of information.

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EDGE

Laura Watts



View-over-emec-wave-energy-test-site-orkney-scotland, by Laura Watts

On the precarious edge infrastructures sparkle unexpected.
On the leading edge the sea is already rising, the low land drowned.
On the island edge you can see who you are in this with.
On the bleeding edge communities move fast but are not broken.
On the ethnographic edge a consultant works inside out, and cannot find the line between.
On the tidal edge you watch a monumental marine energy machine.
On the monolithic edge the Sun is cut five thousand years ago and five thousand years hence.
On the futures edge we are what we have made and can become.
On the energy edge nothing ends or begins only transforms.
On the cable edge splice the fiber ends together and let the light on.
On the digital edge the signal is just the sum of its analog and human parts.
On the horizon edge sail yearning but never reach the end.
On the peripheral edge center the map.
On the data edge look down and see the energy edge beneath.
On the electric edge count what the electrons do for you but not how many there are.
On the poetic edge journal articles breathe whitespace and grammatical joy.
On the embodied edge feel your creative toes go over and build your best work.
On the cutting edge people are in pain, can you hear?
On the silent edge give voice.
On the troubled edge stay.


This poem of twenty edges is based on nine years of ethnographic research around marine renewable energy whilst part of TiP. For more on this research see Watts 2019 and Watts and Winthereik 2018.

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REBOOT





ING

Strasbourg, Rat King, by Edelseider.
Retusche modifications by Lämpel



THE RAT KING



Steven D. Brown

The first Rat King was documented in 1564 in Germany, the last in 2005 in Estonia. There were 61 cases during this time. A Rat King (from the German *Rattenkönig*) is a collection of black rats (*rattus rattus*) tied together by their tails such that they take on the appearance of a single creature. The number of rats knotted together typically varies between 5 and 12, although the famous Rat King of Buchheim consisted of 34 young *rattus rattus* who were discovered dead. The majority of Rat Kings are, however, found alive, but are often killed on discovery, normally through boiling water or drowning. A number of preserved remains exist, including the noted Rat King of Dellfield, which may still be viewed on display in the Strasbourg Zoological Museum. But many specimens were sadly lost or destroyed in the Second World War. This makes it difficult to draw any firm conclusions about the nature and life of a Rat King.

Rat Kings, like many *rattus rattus*, appear to live close to human habitation. They are typically discovered under floorboards, behind walls, or in cellars. Whilst there are cases of “fake” Rat Kings (and also instances of Squirrel Kings), most are considered to be “natural”. By which is meant that the knotting of their tails occurs through some activity in which the members of the Rat King have engaged by themselves rather than as a direct consequence of human intervention. This has been demonstrated through the application of technologies such as x-rays of the knotted tails and experiments on samples from the corpses which have sought to detect the presence of adhesive agents. Despite the failure of these technical investigations to clarify the mode of being of Rat Kings, reason leans towards the proposition that they are “formed” rather than “born”, since there are cases of

Rat Kings made up of adult *rattus rattus*, such as the great Rat King of Berlin, found in 1860. Given the difficulty of imagining the life experience of creatures so cruelly bound to one another, it must be supposed that Rat Kings become such at a time relatively proximal to their witnessing by humans.

It is a curious matter that so many Rat Kings have been found in the regions of Germany, in places such as Großballhausen, Wundersleben, and Döllstadt (where two were reported in the same year of 1822). This has led some commentators to suspect that the Rat King is a cultural symbol, specifically of the relationship between identity and territory. The greatest number of Rat Kings were documented during the period from the mid-15th to the early 17th centuries when Prussia, and subsequently modern Germany, was in the process of being formed. The Rat King is a symbol of both profound otherness and of the difficulties of living together. It is ancient, marking the long history of co-existence between humans and *rattus rattus* (commonly, but erroneously, regarded as the Plague Rat), yet also modern, in that it starts to appear in rural communities at the moment when they are just beginning to be swallowed into urban conglomerations. Perhaps we might say that, conceptually, the Rat King is the *pain of entanglement*, a material thinking through of the impossible reality of collectivity.

[This piece draws substantially upon Martin Hart's (1962) *Rats*. London, and Allison Busby and Adrian Daub's (2019) *All hail the Rat King*. <https://longreads.com/2019/12/11/rat-king-germany-nutcracker/>]



Clover by Katrine M Kjær

EVIDENCE

Katrine Meldgaard Kjær

The Cambridge Dictionary defines evidence as “one or more reasons for believing that something is or is not true” (*Cambridge Dictionary*, 2020, evidence entry). This definition reveals some of the core characteristics of how we understand evidence today, namely, as something connected to a distinction between “true” and “not true”. But the vagueness of “reasons for believing” in the definition also leans into the ambiguity in this otherwise seemingly confident concept: what is a legitimate reason for believing? And where do these reasons come from?

Evidence sits at the very top of the hierarchy of scientific knowledge production, particularly within the natural sciences. One of the arenas we know this word from is medicine, where evidence-based medicine is a current “gold standard”, particularly as it is enacted in randomized clinical controls (Keshet 2009; Timmermans & Berg 2003). Here, evidence-based involves the production of data on a specific phenomenon, such as treatments or medications, and is based centrally on eliminating bias in order to produce results about what is either true or not true about the phenomenon under investigation. Not everything can count as evidence within this framework; singular, embodied experiences, for example, are often discounted or even seen as being explicitly what evidence is not. Rather, what can become evidence is something we associate with the neutral Laboratory, that which is extricated from the subjective, the personal: removed, in short, from context.

However, evidence's position at the apex of knowledge hierarchies has not spared it from cultural and social scientific poking and prodding. Here, STS scholars, such as Bruno Latour, Donna Haraway, and Karen Barad have argued that evidence is neither neutral nor removed from context, but is instead produced as a part of deeply embedded socio-technical-material processes: Haraway argues that all knowledge is "situated" and is thus subject to partial perspectives (1988), while Latour (1986) and Barad (2007) claim that knowledge is fundamentally shaped through its apparatus of production. This work thus shifts our perspective on evidence from being "untainted" by and removed from human bias to, in fact, being something contingent on, produced, and embedded within networks with histories. This approach to evidence, then, also entails a shift from framing evidence in terms of asking: *What can this evidence prove as truth or not truth?* to: *What processes are involved in the making and acceptance of "evidence" as indicative of "truth"?* In particular, Latour and Haraway's work has been highly influential in how otherwise high-status concepts such as evidence – and the associated concepts of objectivity and truth – might be approached from STS perspectives: namely, as something whose production can be studied, something that has a history and that comes from somewhere and is, in fact, highly contextual.

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BRAIN-BODY

Celia Roberts

- How Trauma Derails the Time-Keeping Part of the Brain (and One Way to Bring It Back)
- When a client's "thinking brain" goes offline
- Why can trauma be so devastating for our clients' relationships? The answer could lie in the brain
- Why Connecting with the Right Brain is Key to Regulation (The National Institute for the Clinical Application of Behavioral Medicine emails, 2020-21)

I have signed up to one of those email alerts. It is for psychotherapists, not parents. It is for professionals working with early life trauma survivors: clients with huge difficulties in relationships who struggle to contain their feelings, to be in and on time, to connect, even to think.

What is offered here is a set of discourses – concepts and practices – to (re)make the brain-body. These courses introduce us to the latest in the "neurobiology of attachment" or "developmental neurobiology", that is, to scientific understandings of how our brain-bodies do relationships with humans, animals, and the world. What are the neurobiological processes of fear and safety, of love and care, of anger and hurt? Sessions talk about clients' brain chemistry, evoking neurochemicals and brain structures as significant actors in therapeutic interactions. Body-focussed therapeutic practices are taught – a client experiencing "collapse" needs to increase their sympathetic nervous system, to raise their noradrenalin levels, to move back into a realm of psychological safety. The teaching psychiatrist advises that a therapist faced with this situation might suggest the client stand and literally push a wall or door, or jog on the spot, to



Radu Jianu/Brown Uni 'Neural Connections In the Human Brain'

“activate” their “fight or flight” defensive responses (rather than the passive strategies of shutdown and submit).

To the critical eye, this might look like rampant biological essentialism, reducing the social complexity of mental life and relationships to neurochemicals and bodily movements. Surely social scientists would be “against” this?

Looking more carefully at what is happening here, we might instead see an attempt to bridge the historical gap (which developed across the 19th and 20th centuries) between scientific/psychiatric knowledge of “the brain” and its activities, on the one hand, and psychotherapeutic understandings of psychosocial life challenges and the relationships that might ameliorate them, on the other. What these courses do is to try to elaborate or enliven the hyphen in “brain-body”, to learn what that connection might be and thus to understand better what might help trauma survivors to live with less suffering. Stitching across such vast, defended gaps is not easy. It involves the development of a new field blending technoscience, biomedicine, and psychotherapeutic care. And money. This new field is emerging within universities and outside them – in psychotherapists’ offices, in social work encounters, and in homes. As adopters, my partner and I were trained by social services and charities to “therapeutically parent” along these lines (Mackenzie & Roberts, 2017). Here, in its North American form, such learning involves a website, frequent emails offering “special prices” and intriguing “tasters”. If I want to know more – and I do – I have to buy.

These emails have a troubling aura of salespersonship. But each one, and indeed their regularity, gives me hope. Out there, intelligent and committed people are thinking about suffering, and doing things to try to help. Remaking our brain-bodies one email at a time.

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HEALING ARCHITECTURE

Thorben Simonsen

Healing architectures for psychiatric institutions are designed and developed as technologies for treatment, “curing machines” (Foucault 1973) thought to support individual recovery and healing through a particular architectural arrangement and spatial organization. Imagine a psychiatric hospital that, unlike the imposing structures of more classic Victorian settings, has open, transparent, and flexible



New Psychiatric Hospital Slagelse, Denmark. Photo by Karlsson architects/Jens Lindhe

spaces. Soft, pastel wall colors help patients orientate themselves, glass partitions animate a sense of safety and security, strategically located greenery connects patients to “nature”, and advanced lighting systems – which gradually change colour according to the time of day – soothe patients through more ambient atmospherics. Such an imaginary has become the norm of contemporary psychiatric

hospitals: therapeutic operators designed to support recovery through a progressive movement through space, from individual patient rooms, through common-areas, and, finally, out into society.

Through such a synthesis of functional demands and sensory impressions, healing architectures are transforming contemporary medical spaces of care, arguably a contemporary version of what the German philosopher Peter Sloterdijk (2016) has called the “artificially great”. As spatial configurations, healing architectures indeed shape mobilities, infringe upon opportunities, and organize visibilities. The spatial organization of psychiatric care is, however, both constitutive of, and constituted by the spaces within which it *takes place*.

We might, therefore, consider for a moment nurses working with patients in such a hospital. In providing care, nurses can move patients to certain spaces within a ward – a patient room or a common area, say – based on the patient’s willingness. Yelling, for instance, is not allowed in the common area but accepted in the patient room. Moving patients between spaces based on the idea that yelling is a place-appropriate activity shapes the characteristics of those spaces. While physical spaces facilitate the movement of patients, the simultaneous sanctioning of behavior enacts those spaces in a particular way. Care practices recursively build upon and make use of the ordered outcomes of interactions between patients and nurses (yelling *here* and *not there*) that the enacted spaces provide. To the extent that any given architecture may be regarded as *healing*, I would like to add that any therapeutic effect is more a function of spatial orderings than simple material causation. By closely following and detailing the situated practical actions taking place within and across healing architectures we may come to a better understanding of what healing architectures actually do in practice.

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Infrastructure for public health. Photo by Anders Kjærulff

INFRASTRUCTURES

Brit Ross Winthereik

Infrastructures are integral to human life. They are also ubiquitous as electricity networks, water pipes, industrial food production, sewage systems, information and communication technologies, financial systems, and much more. They permeate our societies and can be found in all corners of the world (Winthereik & Wahlberg, 2022).

Offering a vantage point from which to understand power relations, stability and change, identity, meaning making, future making, and politics, infrastructures are no longer solely a concern of computer scientists and engineers. Within cultural studies, anthropology, sociology, human geography, political science, and pedagogy infrastructure has become a new and fascinating conceptual lens for inquiry into human life and organizing.

Infrastructure studies have taught us that as infrastructures grow, their purposes tend to change. This has been described as “function creep”, but is more aptly seen as both a change in the functioning of the infrastructure itself and as a transformation of its context or field of operation. Digital infrastructures seem to be especially prone to this kind of change due to the many potentialities ascribed to them.

One example of such transformation of purpose is when a digital health record that was put in place to standardize registrations of health information by the use of diagnostic codes becomes a tool for financial accounting. Or when Covid-19 testing infrastructure becomes the means of collecting biological material to map population genes. Or when facial recognition captures excess data on gender and ethnicity for God knows what other purposes.

In her book on surveillance capitalism Shozana Zuboff (2019) describes how technology companies (tech giants) utilize metadata about customers to predict new needs for products and services. Zuboff's work marks an interesting moment in infrastructure studies, signalling how data have morphed from that which are transported through IT systems to that which enable companies to innovate. This means data have become infrastructure for services, even welfare services, as public sectors increasingly reimagine *their* services through data. Data – their potentialities and powers – are curious infrastructures, it seems, given the ambiguity about what “data” are and are not (see entry on data, this volume). A complicated foundation, to say the least.

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REGAINING





NG



'Blue study' by Thad Zajdowicz

DIGITAL WATER

Astrid O. Andersen and Jonas F. Jessen

“Digital water”, understood as the uptake of datafied smart technologies within traditional water supply systems, is imagined by its leading advocates to optimize the economy and sustainability of the water utilities of tomorrow. Digital technologies are envisioned to enable informed decision making in an ever more uncertain world, based on real-time interoperable water data collected and analyzed via imaging satellites, sensor technology, machine learning, and AI-empowered predictions. Leakage in water infrastructure, for instance, causes huge water and economic losses around the globe. LEAKman is a Danish initiative that combines pressure reduction, online hydraulic modelling, water balance reporting, and noise sensors listening for leakages to deliver a “unique Danish solution to stop global water loss”.¹⁾ This and other digital solutions are projected to bridge data gaps, monitor system resilience, and even predict breakdowns. As new digital technologies emerge, ambitions grow, crystallizing the way water is imagined, managed, distributed, and regulated as a composite resource, entailing both water and data on water (availability, quality, flow, pressure, consumption). With digitalization enabling mass water data production, the hydrological cycle is augmented, and the outcome is a resource-double: water-cum-data. The future history of water (Ballesterro 2019) is, thus, partially digital, with its water flows controlled by data. Contrary to water – a finite resource managed in closed systems – contemporary flows of water-cum-data are cumulative, immeasurable, and infinite (Hogan 2015). And, just like data, the potential of digital water is articulated as limitless.

¹⁾ <https://leakagemanagement.net/>

Digital water, in all its versions, carries a lot of *promise* (Anand et al. 2018), which takes on local and national forms but is global in its aspirations. It is a promise of optimization and access, of equitable water futures, and of responding to current and future climatic challenges. And for the most inventive, it also promises to scale for export to markets worldwide, resulting in economic profit and growth. Take the installation of smart meters in Arequipa, Peru, as a case in point. In the city of Arequipa, scarce surface water is used for domestic, industrial, agricultural, and mining purposes (Andersen 2016). Yet smart meters not only improve accuracy in water billing and measurement, they also displace the ability of water users to solve local conflicts and disagreements that arise around specific water problems. Datafying water, thus, disrupts waterworlds (Hastrup & Hastrup 2016), affecting the capacity to negotiate water rights locally. Just as unequal access to fresh water is a widespread challenge, proprietary approaches to water-cum-data may very well feed a “digital divide” between “data-rich” and “data-poor” in the industry (boyd & Crawford 2012). And here, data-poor means water-poor. Consequently, digitalizing water raises questions of democracy, privacy, equity, and the commodification of water, issues that beg for critical studies of digital water as sociotechnical assemblages of the present and the future.

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INFORMAL WELFARE

Barbara Nino Carreras

At a library in Copenhagen, community-supported access to welfare (Coles-Kemp et al, 2020) is in plain sight. Every citizen living in Denmark should have access to welfare services, yet many citizens struggle to access benefits through state-mandated apps and websites. So every Tuesday and Thursday, the library hosts two-hour Information Technology (IT) support sessions for people who need help in with their applications.

A woman in her sixties with bright blue eyes arrives at the reading hall. She greets the staff familiarly. “I need to apply for financial aid again, to pay the heating”, she says.

A group of volunteers is prepared to help in the reading area, a large, bright room with many windows and overflowing bookshelves. Those providing IT support are volunteers: a retired doctor, a retired IT professional, and a retired schoolteacher. Yet they are supported by library staff who also provide assistance for citizens when volunteers are in doubt about regulations. One of the volunteers sits beside the new arrival, opens a laptop, asks for consent to see her information, and together they spend half an hour opening her Gmail and the state-mandated app, Digital Post. Slowly they find her login card and search through a small notebook where she has written her passwords. Finally, the woman types, key by key, her personal information into an online form while struggling to read the information on the screen. It takes approximately forty minutes for them to apply for financial aid.

I approach her while the volunteer is browsing for information about the application.

“Yes! It is done!” She says smiling.

“Do you always come here to get help?”

“Yes! As a pensioner I can apply for financial aid to pay my heating bill, but I have to come here. Now I need to buy a smartphone. I can’t remember which brand. I don’t want to, but I have to, because everything is on the computer and the physical login card will no longer be valid.”

“And when you need help and you can’t come to the library, who helps you?”

“My daughter. Especially during the lockdown, but even before that. She helps me when she is at work, or with her children. Ever since it became mandatory for us to use the computer, she has helped me. I send her a message, or I call her, and she helps. She has two children, a snake, and a dog, but she still has time to help me send letters to the authorities.”

The library volunteers have the task of ensuring that citizens can successfully apply for welfare benefits from start to finish: treating citizens’ personal data responsibly, attending to questions, browsing online guidelines, calling the authorities on behalf of citizens, providing emotional support, and keeping citizens’ information and passwords safe during and after each administrative task on a public laptop. In some cases, library staff and volunteers teach citizens workarounds when the apps and websites do not work.

What is noticeable here is how the state disempowers citizens struggling to access and use digital technologies through its mandated digital welfare provision, while relying upon others to respond to this disempowerment (volunteers and relatives) from a sense of community service. Digital welfare services become a mediation point, then, for processes of disempowerment and care, (Tronto, 1993) as informal helpers find ways to repair and maintain citizens' equal access to welfare.

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Heatwave in Hamburg 2017 by VG

PROTEST

Vasillis Gallis

What does protest mean and how has it changed with the advent of technology? And what happens to technology when it is used as a means of protest? Protest movements have a long tradition of appropriating technologies and reinventing their use in ways not intended by their designers. Andrew Feenberg (2002) argues that artifacts also provide new possibilities for protest actors who can use the potential of technology to challenge the norm. Gutenberg's printing technology enabled the explosion of the Renaissance as a secular protest movement against Church control. Martin Luther nailed his Theses to the door of a German church in 1517, inaugurating the Protestant Reformation, at the same time as he had multiple copies printed to distribute elsewhere. Protest seems always to arise when authoritative power is established and when revolutionary movements are appropriated by the establishment. The printing press also supported the early Anabaptist movement in challenging Luther's reform and demanding a more radical church and freedom of religion. Many historians draw a red thread between these early protest sects and contemporary revolutionary movements. However, technology is not always mobilized in protest against asymmetrical power structures; it can do other work. Take the Luddite protests in the 19th century, for example.

Historically, the intersection between protest and technology has become the place where new forms of social mobilization have emerged. Thus, to understand and define the conduct of protest one must also further investigate the complex role of technology in “materializing relations of justice” (Papadopoulos 2011) and facilitating “subversive mobilities” (Cohen et al. 2017). This necessarily goes beyond a traditional view on protest and protest methods. The digitalization of protest – or the spreading of protest images and propaganda through digital technologies – has created new standards and praxis. The intertwining of social movements and social media, for example, has, to some extent, enabled the sidelining of corporate media. Now unmediated radical ideas, mobilizations, demonstration images, and so on, can be spread more swiftly, producing, at the same time, new protest and solidarity practices. A vivid example of this was the use smartphones by Syrian migrants in 2015 for various survival strategies, showing how digital protest generates spaces beyond state surveillance that enable movement and can imply emancipatory mobilities.

This is not to say that technology is a silver-bullet solution for protest movements. The revolution will certainly not be social-mediatised. Several activists point out that sensitive information can also be used by those authorities whom digital media is used to obstruct. Some are critical of an over-reliance on virtual platforms, instead noting fragmentation risks, the spreading of general political formulations without consideration of local contingencies, and technology-mediated vulnerability. They raise serious concerns about the potential of turning corporate mainstream media into tools of direct action. In this context, the use of commercial social media by protest movements runs the risk of being exposed to a continuous reappropriation wherein the overproduction of value by capitalist institutions comes at the expense of protest.

We cannot deny, however, that commercial social media and other alternative web-based platforms have become arenas where protest movements have applied and tested new practices, propaganda, and organizational schemes – not without ambiguous consequences. The #Icantbreathe insurrection in the US after the murder of George Floyd by police officers is the latest example of this hybrid form of protest in which the digital spreading of the murder video materialized fierce clashes between protesters and law enforcement. Thus, it becomes imperative to further investigate the complex and intertwined hybrid role of technology and protest. After all, and paraphrasing Bakunin, the passion for protest is a creative passion, too! Protest movements have been exceptionally creative in reclaiming technology.

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MAINTENANCE

Mace Ojala

Maintenance is the art and craft of keeping the material world going. We do not even need to conjure up the concept of “entropy” to see that the world we inhabit together would fall into complete disarray without sustained maintenance.

It is helpful to contrast maintenance with repair. Repair and the breakdowns to which it is a response have been a productive topic for Science and Technology Studies (Denis & Pontille 2019). A lot

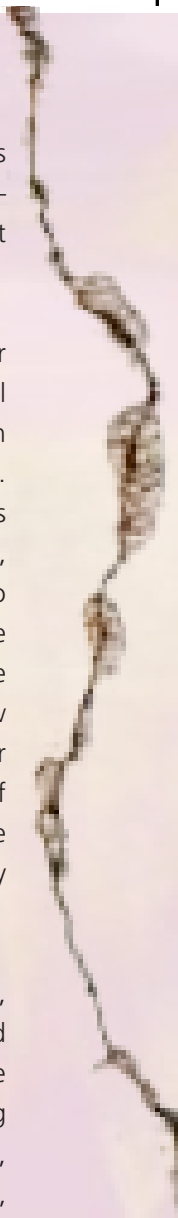


Chainwash: Oil on steel, textile and flesh
Photo by Mace Ojala

can empirically be learned from instances of breakdown, and from observing the flurry of mending and reorganizing which foreground what had receded from view into the background (Bowker & Star 1999; Star 1999). On the other hand, paying attention to maintenance highlights the ongoing effort of stabilizing that which precedes breakdowns. Rather than reactive, the temporal work of maintenance is anticipatory, conservative, and open-ended in nature.

For anthropologists and sociologists of technology, studies of future making are particularly relevant inasmuch as technology discourse revolves around the future. Maintenance preempts certain futures in





the hope of circumventing them, while simultaneously inviting others by nourishing the conditions favorable to them. Therefore, we can – and should – carefully study which past futures are present, and what exactly keeps them going.

Research perspectives from the ethnography of infrastructure (Star 1999) and technography (Jansen & Vellema 2011) show that practical maintenance is typically distributed across actor networks which include both humans and “non-humans” (Latour 1992; Latour 1994). Artifacts bear a large part of this maintenance burden. As inhabitants of the material world, we intuitively understand that bridge pylons, for example, will crumble unless maintained. Yet, besides falling to the ground, a bridge can also fall out of fashion. This might be the case if we chose, say, to reshape our urban environments to make them more hospitable to bicycles. Or if we were to establish a new border checkpoint. Similarly, a software programming language or style of software design will eventually fall out of fashion, out of time. Realignment with current expectations of form and function are necessary. And here is the apparent conundrum: order and stability are outcomes of ongoing work.

Maintenance does not hinge on a single identifiable capacity; instead, it is plural, always reinvented, configured, produced, and reproduced in unique situations with the resources at hand – which often are too few. While the bread and butter maintenance work of weaving together the old and the new resides with practitioners (Cohn 2019), the STS scholar can productively contribute by describing, analyzing, contextualizing, and theorizing these situations.

To feel your entanglement in these networks of maintenance, consider any concrete worldly artifact around you, and try repeating with me these words from Maria Puig de la Bellacasa (2019, 199): “I depend on what depends on you.”

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COMMUNITY

Irina Papazu

The concept of community has traditionally been used in community studies to refer to a physical place harboring a group of individuals who share feelings of belonging and solidarity. Members of the community share norms and values and meaningful relations, they trust and are familiar with one another, and, importantly, they share a place (Bradshaw 2008). This conceptualization is known from German sociologist Tönnies' distinction between *Gemeinschaft* – referring to a close-knit community, typically a rural village, a neighbourhood, or small town – and *Gesellschaft* (society) or the “alienating” industrial city (Bradshaw 2008, 6; Tönnies 2002).

Of course, “[p]laces are not necessarily communities” (Bradshaw 2008, 5), and (it should go without saying, but in community studies it does not) not all communities are place-based (Brennan & Brown 2008). As an example, Denmark’s “Renewable Energy Island”, Samsø, can both be understood as a place-based community and as something more loosely knit together, materially and narratively.





Image by Maike und Björn Bröskamp from Pixabay

Surrounded by water on all sides, the island is a resource-constrained environment *par excellence*. During fieldwork on the island I was told by islanders, “We probably stick together more because we’re an island... We’re surrounded by water, and that humbles you. Everyone knows we’re in the same boat” (interview, Oct. 2013). Island life compels you to get engaged, because “everyone must fight for the survival of the community” (interview, May 2014). While entering a close-knit community, you also “enter an uncertain world when you move to Samsø” (interview, Nov 2013). The sports center, the broadband connection, and, with the Renewable Energy Island project, the wind turbines - everyone knows who built them, who fought for them, what was at stake in their establishment, what it takes to maintain them.

So community is not just a social fact. Its presence, vitality, and survival cannot be taken for granted. The community must be continuously enacted through narratives and through practical actions, narratives produced by and directed at the members of the community, as well as – in Samsø's case – its global audiences. The leading figure in Samsø's famous energy transformation, Søren Hermansen, has coined the term *commonity* (community + commons; in Danish *fælledskab*) (Hermansen & Nørretranders 2013) – evoking Hardin's "tragedy of the commons" (1968) and Ostrom's research on the governance of the commons (1990) – to describe Samsø's situation, one in which the community is drawn together and enacted through the shared responsibility to "manage the commons together" in the face of the climate crisis.

With this book, and with an island-based NGO's publication of the *Pioneer Guide to Local Communities*, which advocates place-based green activism (Samsø Energiakademi 2016; www.pioneerguide.com), Samsø performs the double move of affirming its community status to itself and performing itself as a green community to the outer world by making "Samsø" a model for other communities to follow. Through shared efforts and islanders' knowledge of origin stories, past controversies, and challenges, Samsø manages to be at once a place-based and a "post-place" community (Bradshaw 2008). The community emerges in all its fragility in this double sense through both its energy technologies and the narratives that are generated about and through them. Such socio-material technologies not only produce a particular type of island – and island life – they facilitate the island becoming a technology for community building that is a model for islandness elsewhere.

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PRIVACY PARADOX

Irina Shklovski

The privacy paradox is typically defined as the inconsistency between attitudes towards privacy and data disclosure behaviors. Although people often express concerns about their privacy, the same individuals are willing to reveal personal data for small rewards. This “attitude-behavior gap”, as some have described it, continues to confound technologists, politicians, and researchers alike. If people say they want privacy but their actions speak differently, should what



Privacy Paradoxes at Mozfest in London. Photo by author

people say or what they do guide decision making about data policy and technology design? The rapid development of the contemporary data-extractive economy clearly followed the latter route, arguing that no matter what people say they might want, data clearly speaks for itself and convincingly demonstrates that in reality people do not actually care about their privacy very much.

The term “privacy paradox” appeared in the literature about a quarter of a century ago but its first uses had other definitions alongside the well-known inconsistencies in attitudes and behaviors. In 1975 Carol Tavis and Susan Sadd published a book entitled *The Redbook Report on Female Sexuality* wherein they use the notion of the privacy paradox in a different fashion. Tavis and Said consider the fact that change in normative expectations and even legal judgments about things like sex, abortion, sexual orientation, and many other potential objects of moral outrage require that the most private of acts and decisions are made public, discussed, and dissected in the view of all. A decade later Alida Brill (1990) used the notion of the privacy paradox to describe situations when, in order to activate the privacy guarantee, those that are vulnerable must often first cancel it by revealing or exposing what is most personal and intimate. Here questions of privacy are equated with questions of dignity, of being treated with decency and respect, of defining what constitutes civility.

The contemporary digital notion of the privacy paradox as an attitude-behavior gap is a far cry from this wrenching definition of private pain. Instead, it is a convenient excuse for ignoring the desires and attitudes of individuals in the design of our everyday technologies. “In reality, people actually don’t care” is an enabling mantra of digital entrepreneurs, developers, and innovators who are busy disrupting existing social institutions. Re-examining the context of digital data disclosure from the point of view of Tavis, Sadd, and Brill, however, suggests that there is no paradox. There are merely normative impositions that have no real connection to the realities of desires, obligations, and responsibilities that comprise mundane daily practice. Instead, the infrastructures of digital data flows are built based on the expectation that people implicated in these flows are able to express agency.

As Laidlaw (2010) has rightly said, “Where persons experience an augmentation to their agency this is not an increase in their general capacity to get what they want done. It comes instead as responsibility for particular happenings or states of affairs, and these may include states of affairs that they have rather limited capacity to influence.” The state of privacy is not a paradox, just an impossible state of affairs rendering the individual helpless.

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ART

Line Thorsen

In *What Art Is* (2013), influential philosopher of art, Arthur Danto, writes about the distinction between art and other things in the world in an attempt to answer the question, “What makes art art?” For Danto the answer is an essentialist universalism: art objects are designed for viewers to grasp their intended meaning (Danto 2013, 38). In his earlier text, *The Artworld* (1964), Danto similarly suggested that what distinguishes an artwork from other objects – like, for example, a bed by artist Robert Rauschenberg and your bed at home – is how they are evaluated by the artworld. In other words, what makes Rauschenberg’s bed an artwork and the one in your bedroom a bed is how the art object sits within and refers to the artworld and its institutions.

Danto’s definition is widely accepted and used, but by no means does it stand alone, neither within “artworld” discussions nor beyond. In 1967 cultural theorist and philosopher Tsurumi Shunsuke published the book *Genkai Geijutsuron* (Theories of Marginal Art). Writing from Japan and East Asia, Tsurumi offers an analysis of art which argues that there are several spheres – or worlds – of art, only one of which is dictated by the artworld about which Danto writes. Tsurumi identifies three modes of art-making: pure art, popular art, and marginal art. Pure art is Danto’s artworld and what most people know simply as “art”, defined and sanctioned by “Western” artworld institutions, like art history, galleries, and museums. Popular artworks are products for the masses, like design. Marginal art is the artful practices of the everyday: family photo albums, gardening, woodworking, and much else. Marginal art, the most important and widely circulating artform, was relegated to the sidelines (the margins), with the entrance of pure art, and the hierarchy (art/artifact see e.g. Gell 1996) enforced by Western art history alongside other imposed hierarchies (like nature/



Doctor's house by Lee Bull. Photo by Line Thorsen

culture). Today, battles for marginal artistic belonging are being fought across the world: not to be “elevated” to pure art, but to be appraised on their own premisses (e.g. Errington 1998; Hallam 2008). This brief recounting of two theories of art is not just an aid to the non-initiated reader. It also reminds that reader that both “an artworld” and multiple artworlds exist. The notion of art varies across places and spaces, always dragging along worlds with traditions, stakes, contentions, hard work, and passions, as well as long and profoundly rich cultures of artmaking. Importantly, art is always also a colonial and imperial category, which has actively been used to erase some artworlds and promote others. Much like “Science”, “Art” is never innocent or unmarked. Across languages the etymology of “art” is often fundamentally connected to craft and technology (Hui 2020) (*techné* in the ancient Greek philosophical tradition), practices that make worlds and achieve their pragmatic significance in reference to these worlds. Like technology, art making is diverse, and too often its protean nature becomes invisible within the gaze of power (colonial or otherwise). At the same time, as a world-making craft, art is a technology, one that can open up the multiplicity of technological worlds should we be bold enough to dare.

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REDEEM



ING





CO_2 footprint waterbottle by Steffen Dalsgaard



CARBON

Steffen Dalsgaard

In his essay collection, *The Periodic Table* (1975), Primo Levi narrates 100 plus years in the story of a single carbon atom. Starting its journey in limestone rock, this atom moves into organic human and non-human forms of life, and then into atmospheric gas traversing the globe, ending up as part of the structure that shapes the fingers of the author's body, enabling him to write the very piece in front of the reader. Levi's narrative illustrates well how an entity such as carbon, an atom which enters into numerous sets of relationships to form particles and – eventually – life itself, is shrouded in imaginaries both scientific and romantic, becoming both a perspective and an agent.

Since Levi's piece was written, carbon, in the form of greenhouse gas emissions, has become the object, if not the subject, of an austere management regime arising from our contemporary focus on the climate crisis. Carbon is what must be controlled in order to sustain life on earth as we know it. This new status means that carbon management has become a societal, governmental, corporate, and individual concern that occupies states, industry, and consumers alike. We all leave "carbon footprints", and *everything* we do has a (albeit highly differentiated) cost in terms of climate impact (e.g. Berners Lee 2010). The imaginaries stemming from this new state of affairs are both grand and diminutive. Individuals are encouraged to change their lifestyles to ensure lower emissions. Businesses are tasked with finding ways of micromanaging their infrastructures and even their supply chains. Nation states develop "carbon inventories". Aided by various international organizations, such as the World Bank and the UN, regulatory bodies from the EU to municipal authorities have developed governance mechanisms that either invest in the transition to cleaner energy forms or construct frameworks for market trading of emission quotas.

However, such mechanisms depend upon accountable and reliable means of measuring or estimating emissions, something whose transparency is configured through sophisticated sociotechnical means of comparing and making commensurate various forms of actions and activities (e.g. MacKenzie 2009; Dalsgaard 2013). Consider again the movements of the atom in Levi's story, and how it can be accounted for. On top of that come awkward politico-legal questions: What is "fair"? What is "just"? Who will need to reduce emissions if the climate crisis is to be averted? Today, carbon is this focal point for macro- as well as micromanagement of human economic activities, from production to consumption.

The proposed solutions are manifold. Many of these are (techno-) optimistic, many more are not. The conclusion, though, is that no single social, political, natural, technological, economic, or legal professional insight alone is enough to solve anything. Carbon refuses to be taken as a simple object which can be managed through simple means or solutions. Only interdisciplinary or even hybrid forms of knowing can address the complexity of its making and existence.

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NUMBERS

Ingmar Lippert

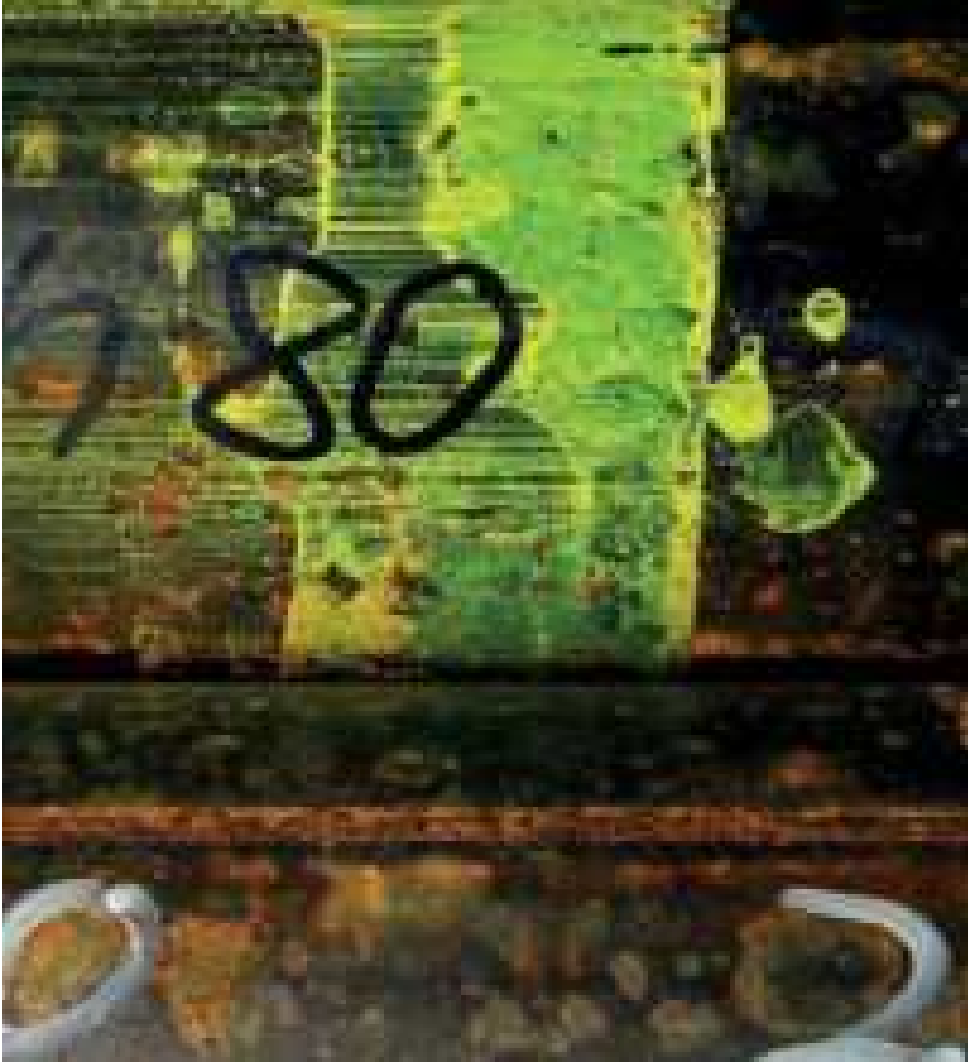
Why should we care about numbers? Economic policy is led by gross domestic product (GDP), climate science calls for limiting global warming to 1.5°C, epidemiology uses the basic reproduction number R_0 to indicate an infection's expected impact (e.g. in a pandemic). The interdisciplinary field of Science and Technology Studies (STS) has developed an analytics of numbers to research what numbers do – to society, for instance – and how numbers are done.

Numbers are ubiquitous; residents in modern societies are expected to be able to read, count, and calculate. Some hate, others love them. Numbers are involved in everyday practices like shopping, measuring length, counting unread messages. Numbers, too, figure in management, governance, in science, engineering, medicine, and many other private and public sector fields that employ technoscience.




"Letters & numbers" by tanakawho





How is it that numbers are so widespread? Are all these numbers similar enough, in kind, for us to treat them similarly? Sociology, anthropology, history, and human geography as well as STS have shown that numbers are employed and produced in very different ways – and that neither mathematics nor data science occupy epistemically privileged positions for understanding numbers.



What do numbers do? This question helps the social scientist who analyzes a number to focus on the consequences of numbers in social, cultural, and economic relations. This focus allows us to go beyond the presumption that the purpose for which numbers are done is actually achieved, and instead explore dimensions as diverse as ignorance, trust, or power.

How are numbers brought about by people and machines? This is a question that can be answered if we turn to the inside of number operations, to data practices or to algorithms, for instance. Numbers are often created and handled by humans, and humans are socially-historically positioned actors. Even if numbers are handled by software, the software gets configured by humans and includes their social biases and values. So, what do humans invest in the doing of numbers? Here we meet a powerful prescriptive field, mathematics. This field attempts to define how numbers ought to be created and handled, following specific forms and modes of logic. As social scientists we need to attend to how these logics operate – in practice. Addressing the actual conduct of mathematics reveals practices of writing and communication that are socially and historically specific. Mathematical communication is performed by embodied humans who necessarily draw on their situated contextual knowledges. Numbers, it can be said, explode internally – numbers are full of relevant social, cultural, and political dimensions.

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COLLABORATION AS FOREST

Atsuro Morita, in collaboration with Sachiko Matsuyama

The things you use in your daily life
they were created by someone
Someone planted, cultivated, and made those things
That process began decades ago
But the forest where that process started
was created eons ago,
nurtured by the earth

— *Forest of Craft*

(<https://www.youtube.com/watch?v=6ITRPs65Ezo&t=129s>)

I am writing this entry while chatting on Facebook Messenger with Sachiko Matsuyama, who is devoted to a circular economy initiative called Forest of Craft in Kyoto.¹⁾ Inspired by the aesthetics and sociality of Japanese craft traditions that essentially draw on wood and forest resources, her ambition is to create a forest-based circular economy with the aid of digital fabrication technologies. At the moment of this writing, she is drafting a funding application for the project, which we brainstormed earlier today on Zoom. Our year-long collaboration, initially limited to my ethnographic research on forestry and the supply chains for her project, soon expanded to include discussions about her funding applications and my teaching, as well as this writing. Through these moments and others, my own view on collaboration has changed accordingly.

¹⁾ <https://www.forest-of-craft.jp>



Photo: Sachiko Takamuro

In our contemporary, knowledge-based society, collaboration – cooperation between partners with different interests, backgrounds, and expertise, not unlike the two of us – has been increasingly taken as essential for innovation and economic growth. While critical of this neoliberal view of collaboration, anthropology and STS have elucidated its often overlooked aspect: the more-than-human forms of collaboration that lie behind the illusion of innovation as merely a product of the inventor’s “ingenuity”. Be it a machine, a scientific article, or a working infrastructure, collaboration between heterogeneous humans and nonhumans working together across social, political, and ontological boundaries is essential.

The epigraph to this entry, Sachiko’s vision of Forest of Craft, also sheds light on unseen collaborations behind Japanese craft products such as wooden bowls, chopsticks, and furniture. But she also sees something more. Sachiko noted in the chat that the sociality of Japanese craft traditions rests on *being attuned to others* – that is, users, materials, and the environment – to the point that the self dissolves in the web of relations of which it is a part (cf. Matsuyama 2018). Forest of Craft urges us to be attentive to innumerable relations that support products and projects like these. It is a web of life that nurtures wood for crafts and cultivates the sensibilities of artisans about and with the materials themselves. It is also where crafts ultimately return when discarded, nurturing the forest, in turn, through decomposition.

The key challenge of Forest of Craft is to reinvigorate and expand this web of relationships into our increasingly unsustainable world. Open-source digital fabrication and instances of circular economies are some of the key alliances for this. However, Forest of Craft seems to push us even further. If what we aim to realize is not a social innovation but a forest, perhaps we will become not its co-designers but co-inhabitants. This might be why Sachiko avoids calling herself a designer. The key mode of relating in Forest of Craft is less about making the most out of difference, as in neoliberal collaborations, and more about fostering and illuminating mutual attunement to each other. How, then, can ethnography be part of this forest, along with crafts, trees, and artisans? How will this transform ethnographic practice? The answers might rest in our efforts toward attunement with each other and with those that inhabit the forest.

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DISRUPTION

Jessamy Perriam



I want you to suspend your disbelief for a few moments and pretend that tech entrepreneurs and venture capitalists have not co-opted the word disruption for their eye-roll inducing, money-making endeavours. What might we think about when we think of disruption if the likes of Uber, Amazon, and Google simply didn't exist? For us as both consumers of their products and services, and producers of data that further fuel those products, it is helpful, from time to time, to imagine what the world might look like in their absence. Our minds might turn to everyday forms of disruption, those moments when things go wrong. Those points in time where we need to find workarounds and use problem-solving skills to achieve what we set out to do in the first place.



Photo: State Library of Western Australia (b2406675_2)

The promise of technology is that we need never be disrupted again (do not make promises you cannot keep). But failures often produce disruptions: trains run late and, in turn, so do we. Algorithms produce biases that impact real people and their wellbeing. Our credit cards get cloned and we need to go through administrative hoops to participate in the economy once more.

Harold Garfinkel studied everyday disruption in the mid-20th century by getting his students to carry out breaching experiments: public events (or stunts) designed to make things go wrong so that he could uncover how people expected things to go right. Was this ethically dubious? Yes. Was this deeply fascinating? Also, yes. Sociologists,

such as C. Wright Mills (1959), show us that understanding our expectations of everyday life relates to our expectations of how society should ideally function. Studying disruption in the mundane everyday helps us, as scholars, to interrogate what the expectations of a functioning society might be.

We want our lives to work in straightforward ways. Elizabeth Shove (2004) talks about this in more domestic terms, suggesting that technologically mediated everyday life in the Global North is oriented around “comfort, cleanliness and convenience”. Disruption – as breakdown – makes visible the things and processes we take for granted (Star 1999). Breakdown deals with the failure of an object; disruption is the impact of that breakdown on people, processes and other objects. When your train is delayed, you realize that there is a network of signalling technology, electricity, and rails that holds the whole thing together. When your road is flooded, you realize that there is a weather pattern and an ecosystem holding the planet in delicate balance.

And yet, we prefer to have an existence where everything just works, where we are sold products that promise seamless experiences (again, more promises that cannot be kept). But we watch this convenient life fall apart the instant the internet goes down or the moment we are told to stay two meters away from our fellow citizens. We need to reconsider the role disruption plays in society; how its is enacted, known, and conceived. For instance, if disruption were personified, it would stand uncomfortably close to you and whisper into your ear, “Pay attention!” Pay attention to your expectations. Who has been shaping them? Are they in your or your community’s best interests. Think about how things might be otherwise. Imagine another way.

As we navigate through the disruptions of the last few years, that whisper becomes a shout: “PAY ATTENTION!” Pay attention to your expectations. What do you really need to get by? Look around to see who and what is really holding things together. Pay attention to how things might be otherwise. What needs to happen in the now to avoid a future where disruption reigns?

Disruption on a grand scale highlights how much we rely on one another and often those overlooked or taken advantage of in the global economy. Big tech makes claims of disruption that are not truly disruptive at all – more often than not they are a repackaging of products and processes to extract maximum profit. How does this distract us from the whisper of disruption in the world around us?

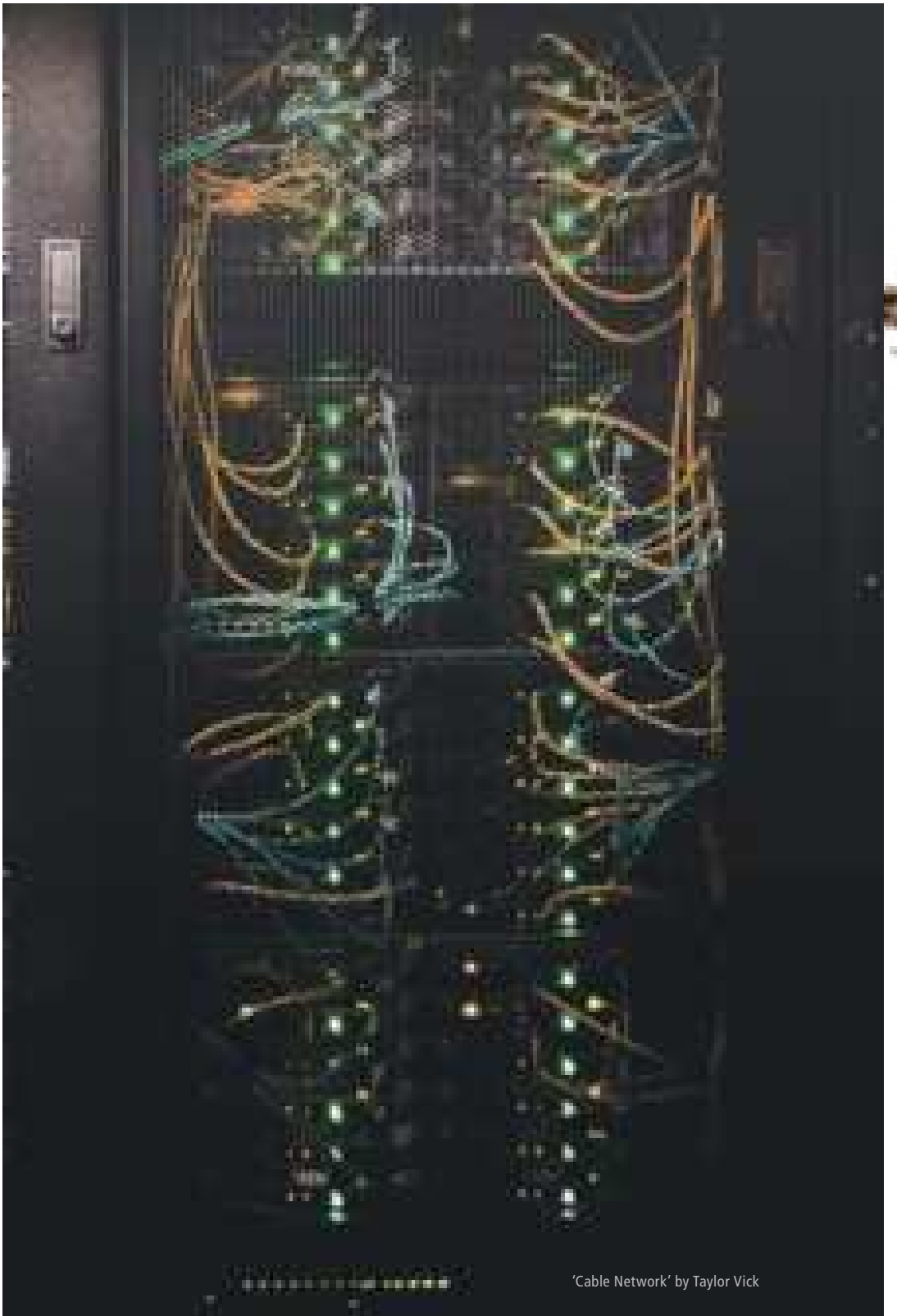
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'Cable Network' by Taylor Vick

BLOCKCHAIN

Sunniva Sandbukt

Blockchain is a distributed database, a time-stamped record of transactions, publicized, maintained, and validated by a wide network of participating nodes. Blockchain is an ideological project striving to create censorship resistance through decentralization. These decentralized participants group batches of transactions into “blocks”, each containing the timestamp of the previous block to form long chronological chains. Thus the resulting blockchain constitutes a publicly viewable linear history of every transaction (Brekke & Vickers 2019).

While the word “blockchain” may conjure images of circuit boards, hackers, and spiderwebs of interconnected nodes, a more accurate depiction would be a noisy warehouse, stocked to the brim with servers. Whirring fans cool machines that have one continuous occupation: to expend vast amounts of computational power to solve complex cryptographic puzzles. These puzzles are part of a consensus protocol designed to ensure that no single participant can gain control of, or change the record. In exchange for the costly energy consumed in the process, participants are rewarded for each block they “mine”. Currently, the Bitcoin blockchain, the most well-known blockchain to the general public, issues 6.25 new bitcoins per block, with a new one being mined every ten minutes (current USD exchange value here: <https://bit.ly/3exmanU>). An early adopter famously spent 10,000 bitcoins to order two pizzas in 2010, making each pizza worth 45,544,000 USD today [Hankin 2019]). Originally 50 bitcoins in 2009, the reward continues to be halved every 210,000 blocks to avoid inflation. This process is both how new coins come into circulation but also what makes each recorded transaction with existing cryptocurrency costly in terms of energy consumption.

The invention of blockchain as a technology for digital money challenges the authority of states as the sole issuers of currency, and banks and other financial intermediaries as the managers of transactional records. In conventional digital payments, the transaction is just a digitized record of accounts, which you “trust” your bank and payment provider to update and maintain accurately (Maurer 2012). In practice, this centralization of authority means that you also “trust” them not to deploy transactional censorship: for instance, by denying accounts to people suspected of being sex workers (Survivors Against SESTA 2018). By removing this central intermediary, blockchains claim to be “trustless”. The degree to which this authority is genuinely distributed among the network participants is more questionable, however, with over 50 per cent of Bitcoin’s mining power being controlled by just four nodes (bitcoinera.app, 2020).

In practice, accessing and using cryptocurrency requires skill, knowledge, money, and technological tools. The less you have of these, the more you depend on various willing intermediaries to facilitate access. This ironically undermines the idea of blockchain as a decentralized and trustless technology. David Harvey reminds us to question what he calls “the crude assumption that decentralisation is inherently more democratic” (Harvey 2014, 142). As much as blockchain can be a tool for decentralized organization, one could argue it also recentralizes wealth and power (O’Dwyer 2015), enabling the more privileged to opt out of existing societal infrastructures as opposed to addressing systemic inequalities and establishing more equitable alternatives (Scott 2014).

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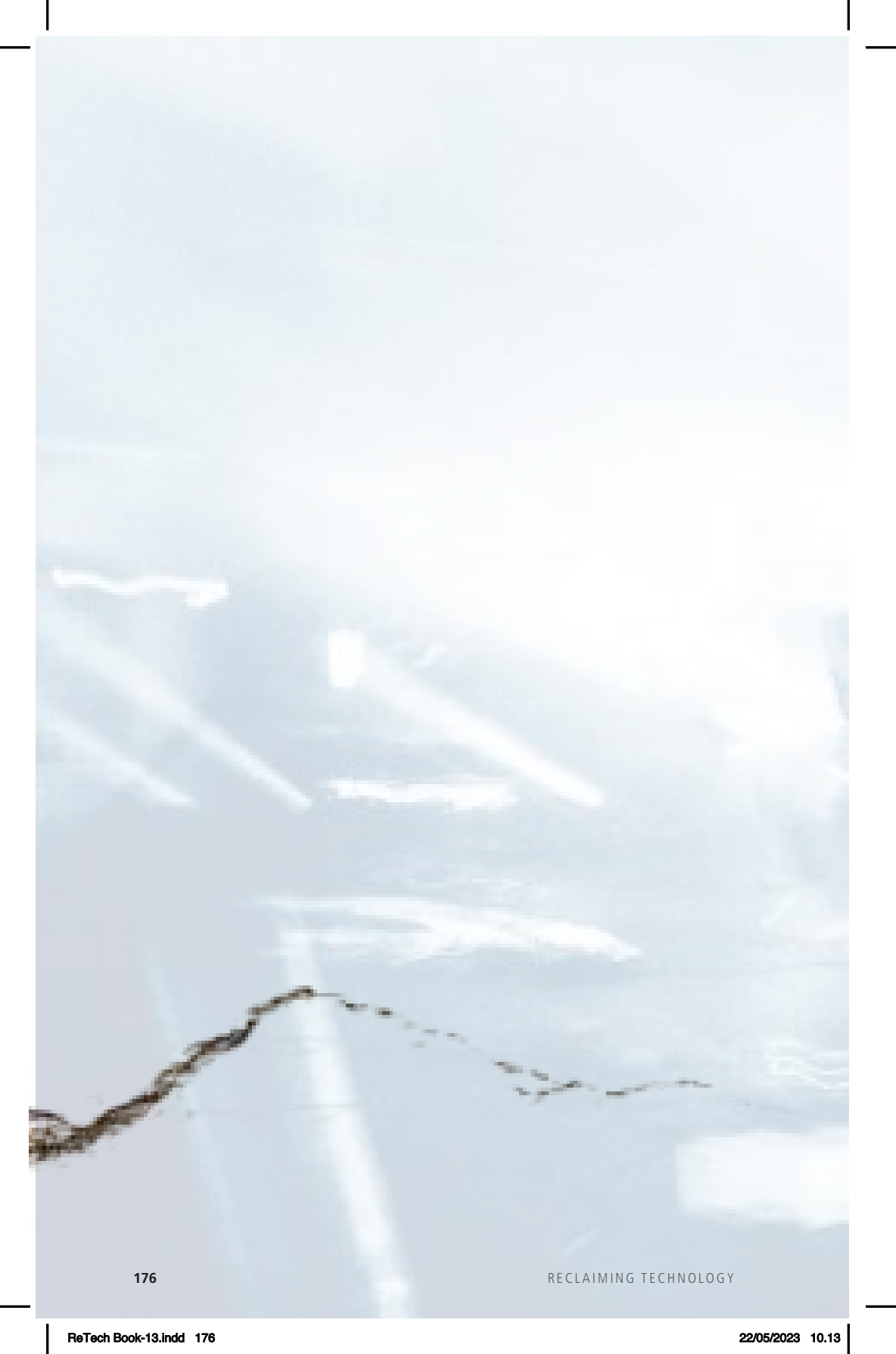
LIST OF AUTHORS AND AFFILIATIONS

- 1. Andersen, Astrid. O** Associate Professor,
Department of Culture and Learning, Aalborg University
- 2. Ballestero, Andrea** Associate Professor,
Department of Anthropology, University of Southern California
- 3. Blønd, Marie** Activist and Independent Scholar
- 4. Bowker, Geoffrey. C** Professor,
Donald Bren School of Information and Computer Sciences,
University of California, Irvine
- 5. Brown, Steven D.** Professor of Health and Organizational
Psychology, Nottingham Trent University
- 6. Cakici, Baki** Associate Professor,
Business IT Department, IT University of Copenhagen
- 7. Dalsgaard, Steffen** Professor,
Business IT Department, IT University of Copenhagen
- 8. Douglas-Jones, Rachel** Associate Professor,
Business IT Department, IT University of Copenhagen
- 9. Gabrys, Jennifer** Professor/Chair,
Department of Sociology, University of Cambridge
- 10. Gad, Christopher** Associate Professor,
Business IT Department, IT University of Copenhagen

- 
11. **Gallis, Vasilis** Associate Professor,
Business IT Department, IT University of Copenhagen
 12. **Henriksen, Line** Senior Lecturer in Literature and Creative
Writing, Malmö University
 13. **Hockenhull, Michael** Post Doc,
Business IT Department, IT University of Copenhagen
 14. **Jessen, Jonas. F** PhD Fellow,
Department of Culture and Learning, Aalborg University
 15. **Kjær, Katrine. M** Associate Professor,
Business IT Department, IT University of Copenhagen
 16. **Lautrup, Andy** Independent Scholar
 17. **Lippert, Ingmar** Chair of Technoscience Studies,
Brandenburg University of Technology
 18. **Mackenzie, Adrian** Professor,
Department of Sociology, Australian National University
 19. **Maguire, James** Associate Professor,
Business IT Department, IT University of Copenhagen
 20. **Makrygianni, Vasiliki** Researcher, Architect AUTH
 21. **Matsuyama, Sachiko** Founder of Monomo

- 22. Morita, Atsuro** Associate Professor,
Department of Anthropology, Osaka University
- 23. Carreras, Barbara N** PhD Fellow,
Business IT Department, IT University of Copenhagen
- 24. Ojala, Mace** Research Assistant at Ruhr University Bochum
- 25. Papazu, Irina** Associate Professor,
Business IT Department, IT University of Copenhagen
- 26. Perriam, Jessamy** Assistant Professor, Business IT Department,
IT University of Copenhagen
- 27. Roberts, Celia** Professor, Department of Sociology, Australian
National University
- 28. Salling, Caroline** PhD Fellow, Department of Technology,
Management and Economics, Technical University of Denmark
- 29. Sandbukt, Sunniva** Assistant Professor,
Business IT Department, IT University of Copenhagen

- 
- 30. Santos da Costa, Priscila** Assistant Professor,
Business IT Department, IT University of Copenhagen
- 31. Shklovski, Irina** Professor,
Department of Communication, University of Copenhagen
- 32. Simonsen, Thorben** Researcher,
VIVE: The Danish Center for Social Science Research
- 33. Thorsen, Line** Post Doc,
Center for Environmental Humanities, Aarhus University
- 34. Verran, Helen** Professor, Charles Darwin University
- 35. Vlassis, Vasilis** Assistant Professor,
Business IT Department, IT University of Copenhagen
- 36. Watts, Laura** Poet, Writer, and Interdisciplinary Senior Lecturer,
School of Geosciences, University of Edinburgh
- 37. Winthereik, Brit. R** Professor, Department of Technology,
Management and Economics, Technical University of Denmark



Reclaiming Technology: a poetic-scientific vocabulary aims to evoke ways of thinking about, and intervening in, technology worlds through a series of blended writing styles.

Consisting of thirty-five short essays, contributors were asked to problematize some aspect of their research with technology – broadly conceived as artifact, process, craft, infrastructure, or concept – without being constrained by the more traditional repertoires of academic publishing. The result is a set of critical and experimental texts whose vocabulary speaks to the poetic, affective, and mundane modes through which technology can inspire and make anew.

The ambition to reclaim stems from a collective desire to shift the grounds upon which exuberant technological claims making occurs. The book’s poetic-scientific approach is an effort at rendering technology otherwise so as to enable the emergence of alternate claims-making pathways towards more just and dignified socio-technical futures.



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